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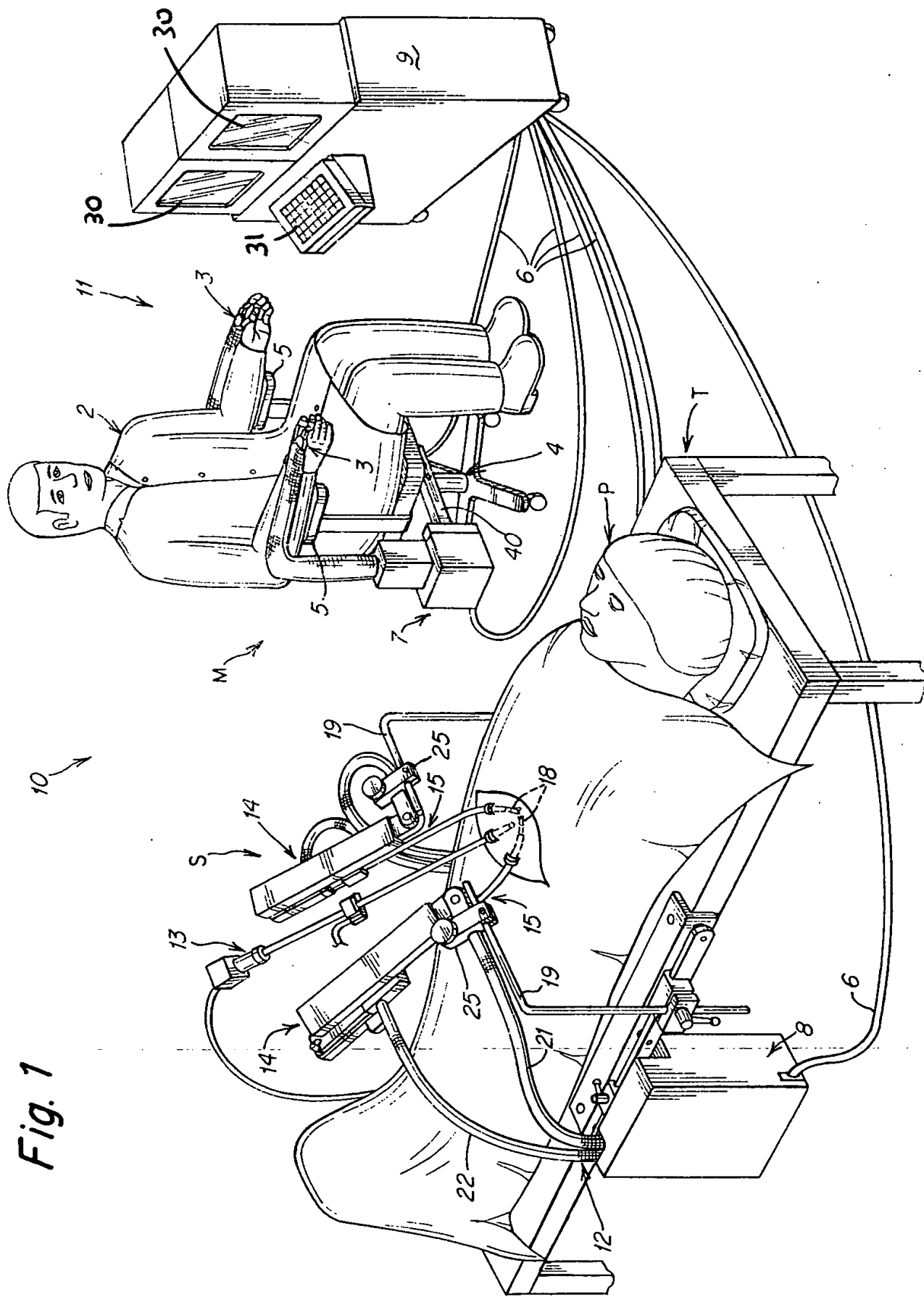
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Fig. 1



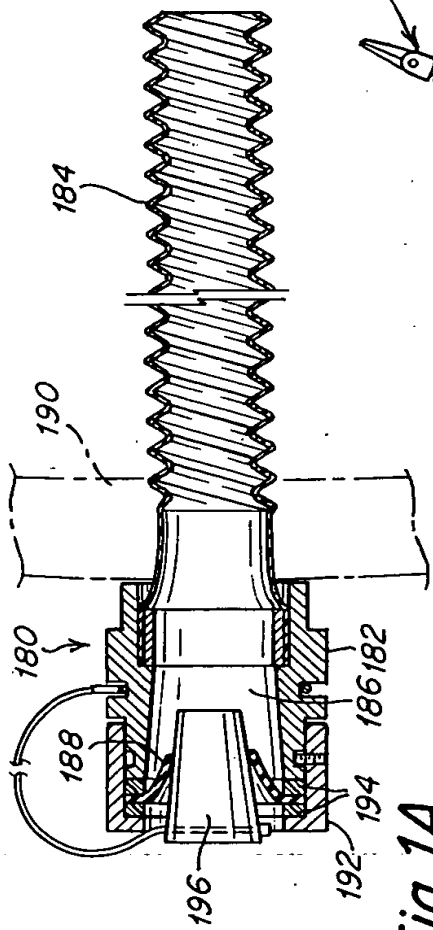


Fig. 1A

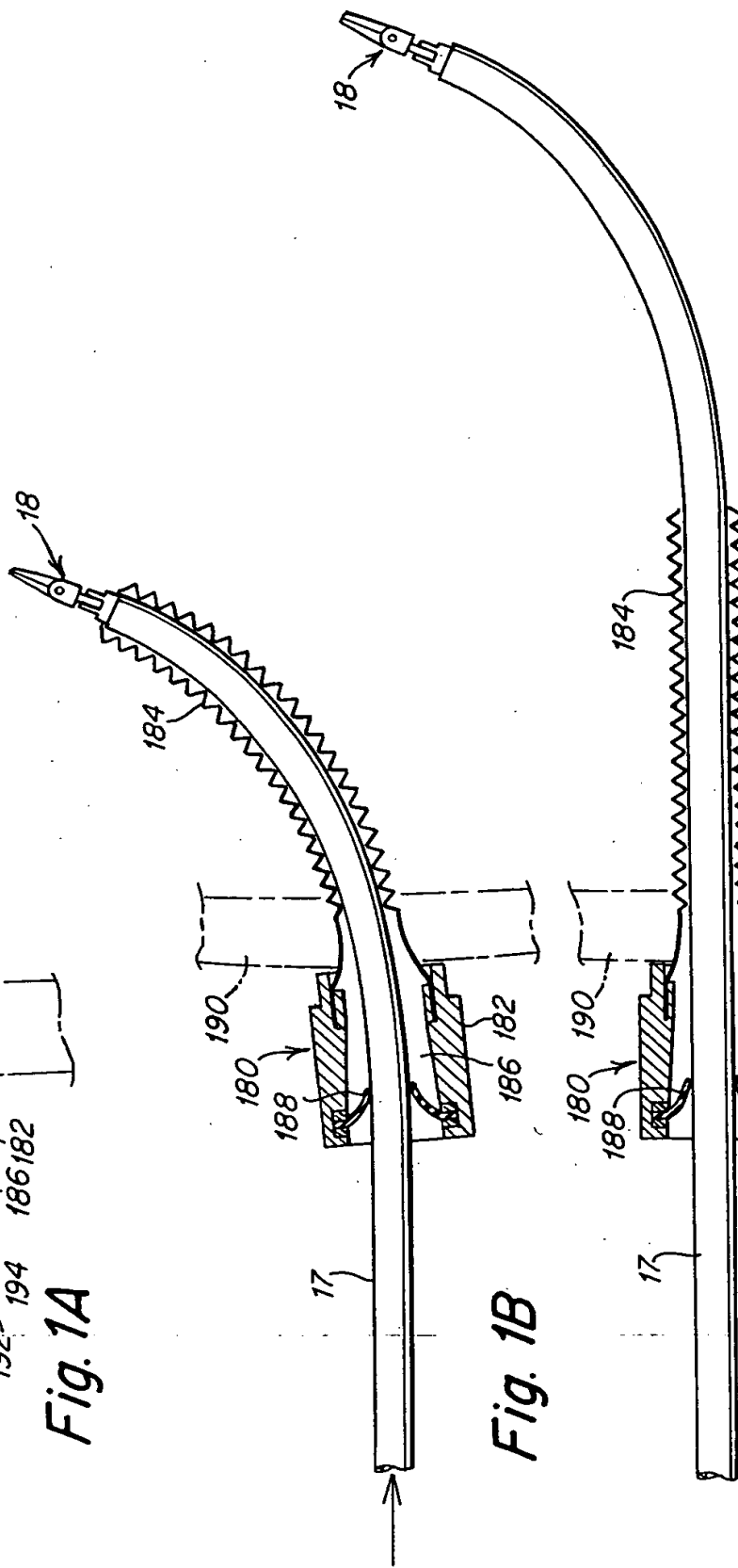


Fig. 1B

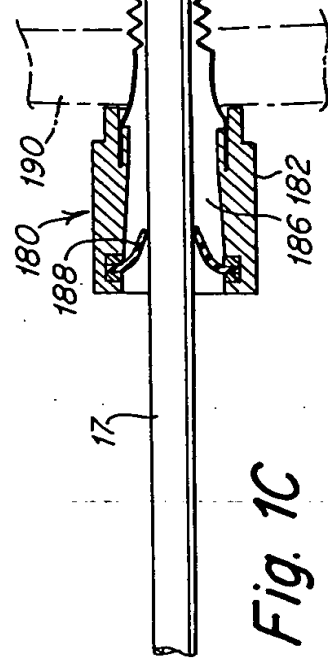


Fig. 1C

Fig. 2A

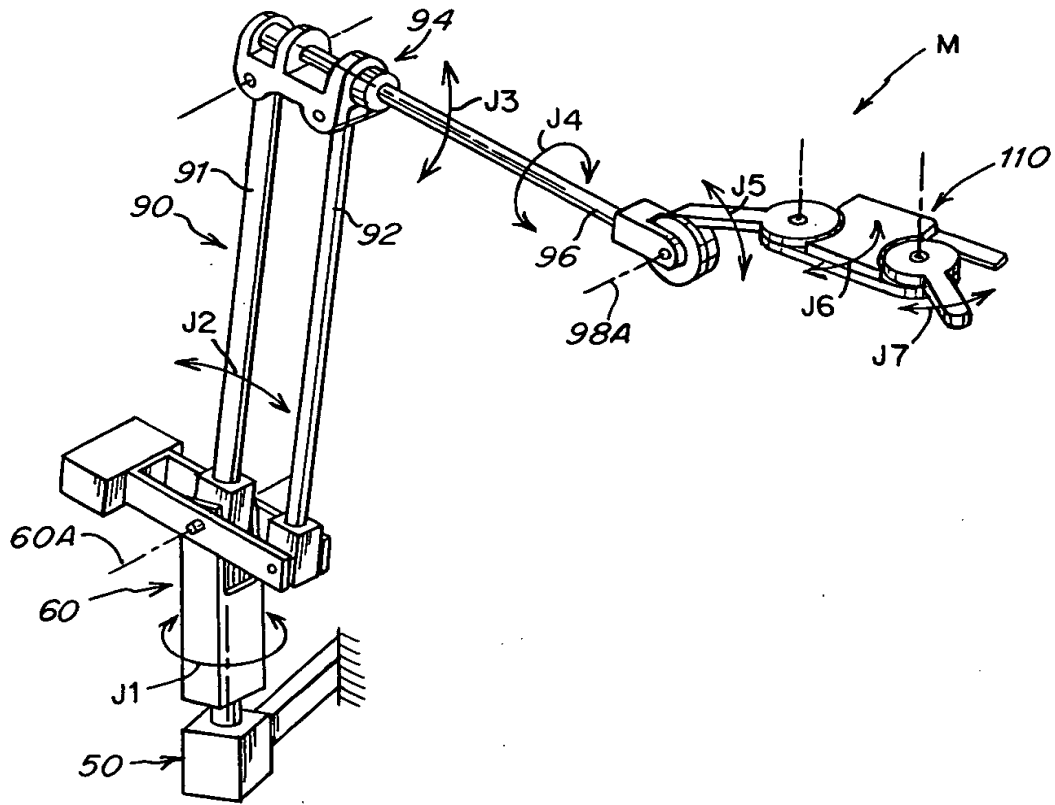


Fig. 2B

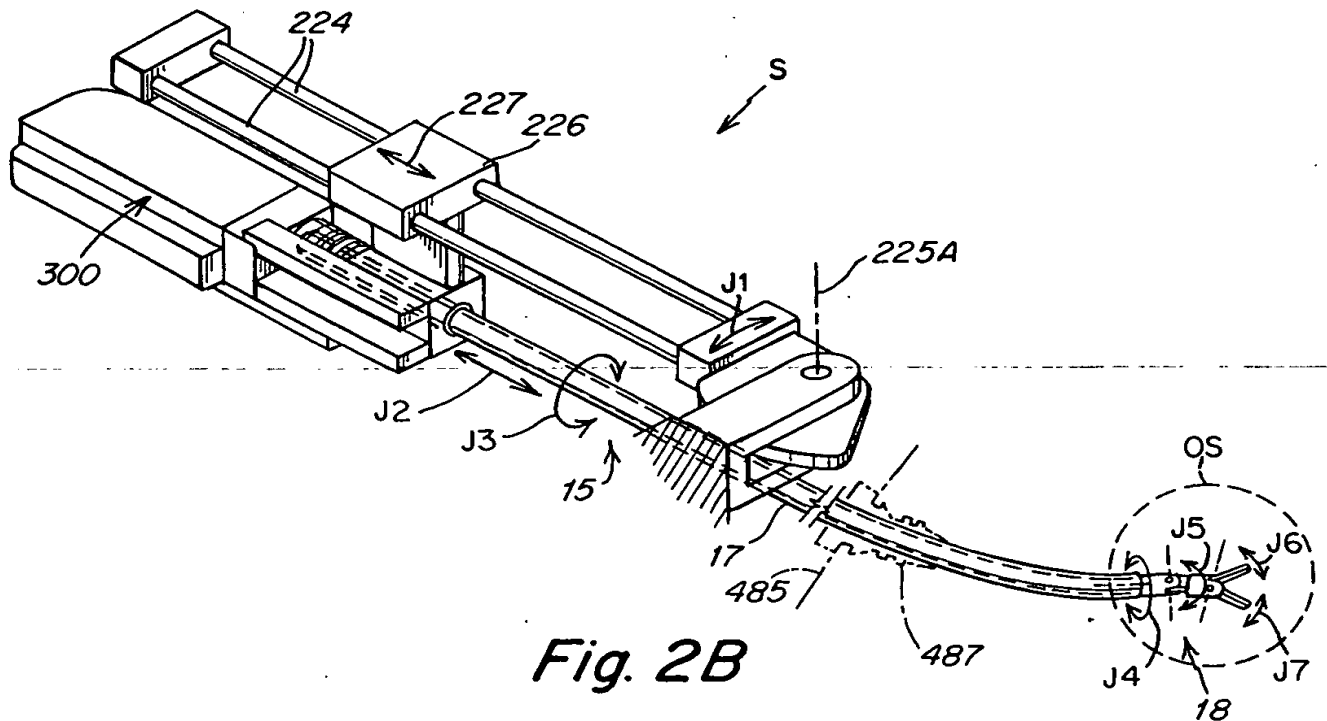


FIG. 2C

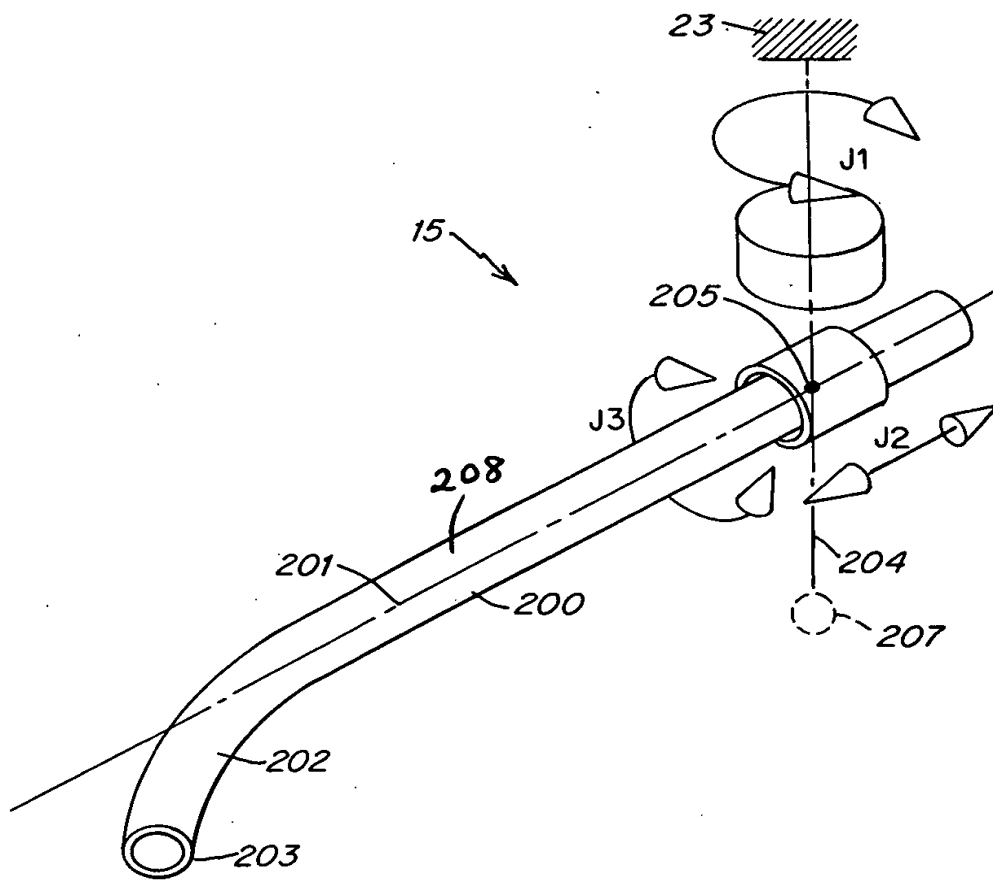


Fig. 2C

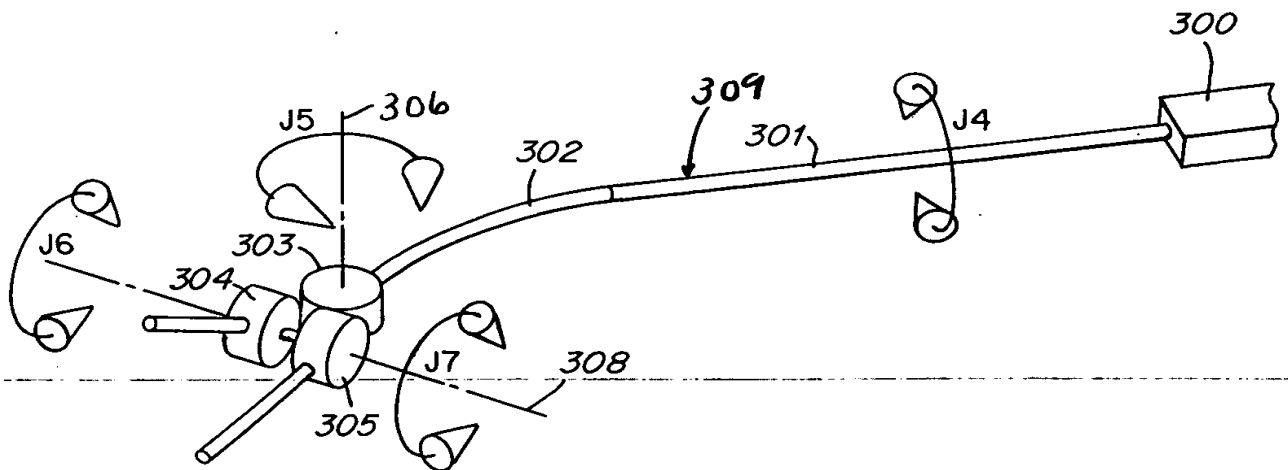


Fig. 2D

*Fig. 3*

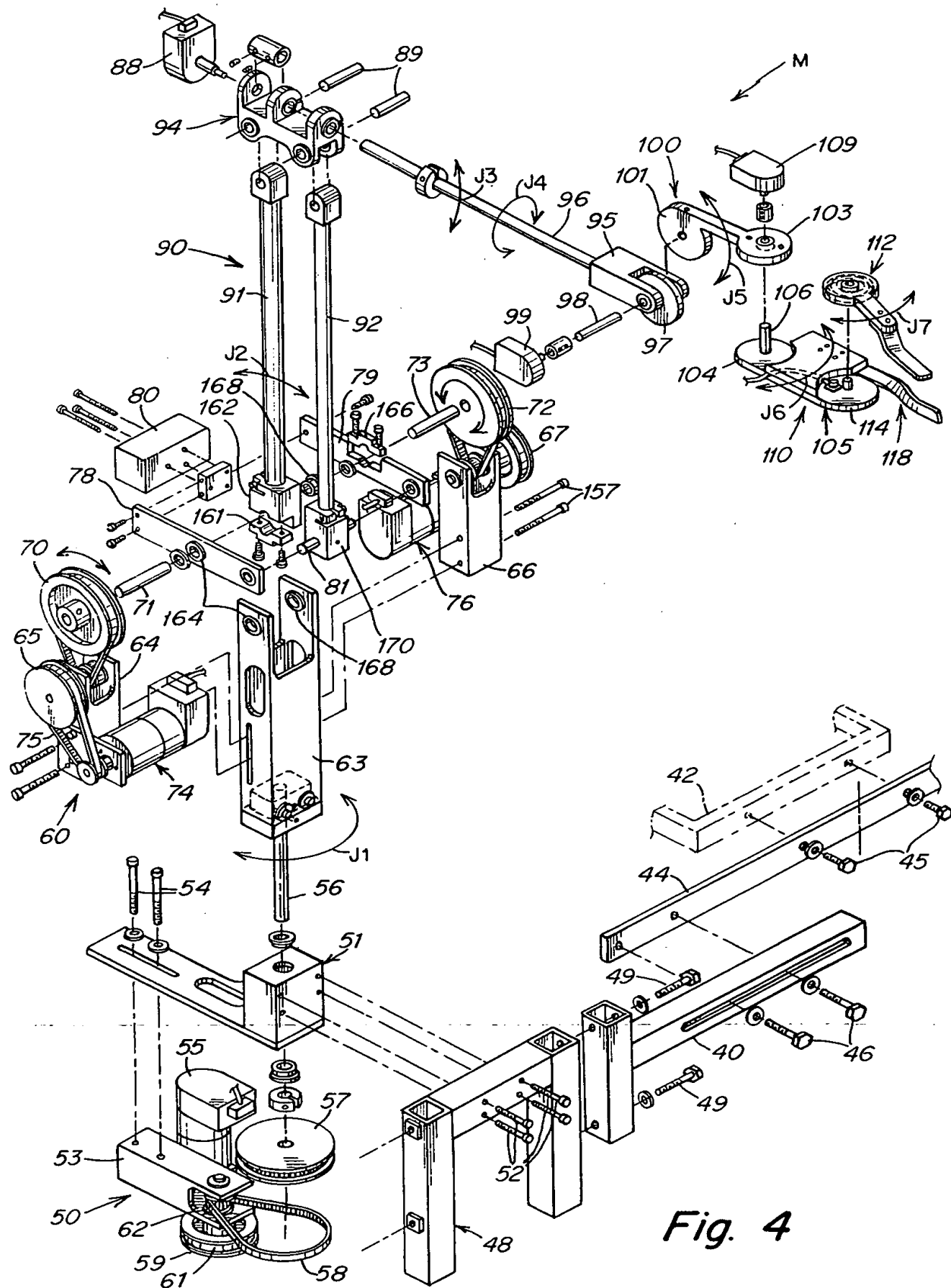


Fig. 4

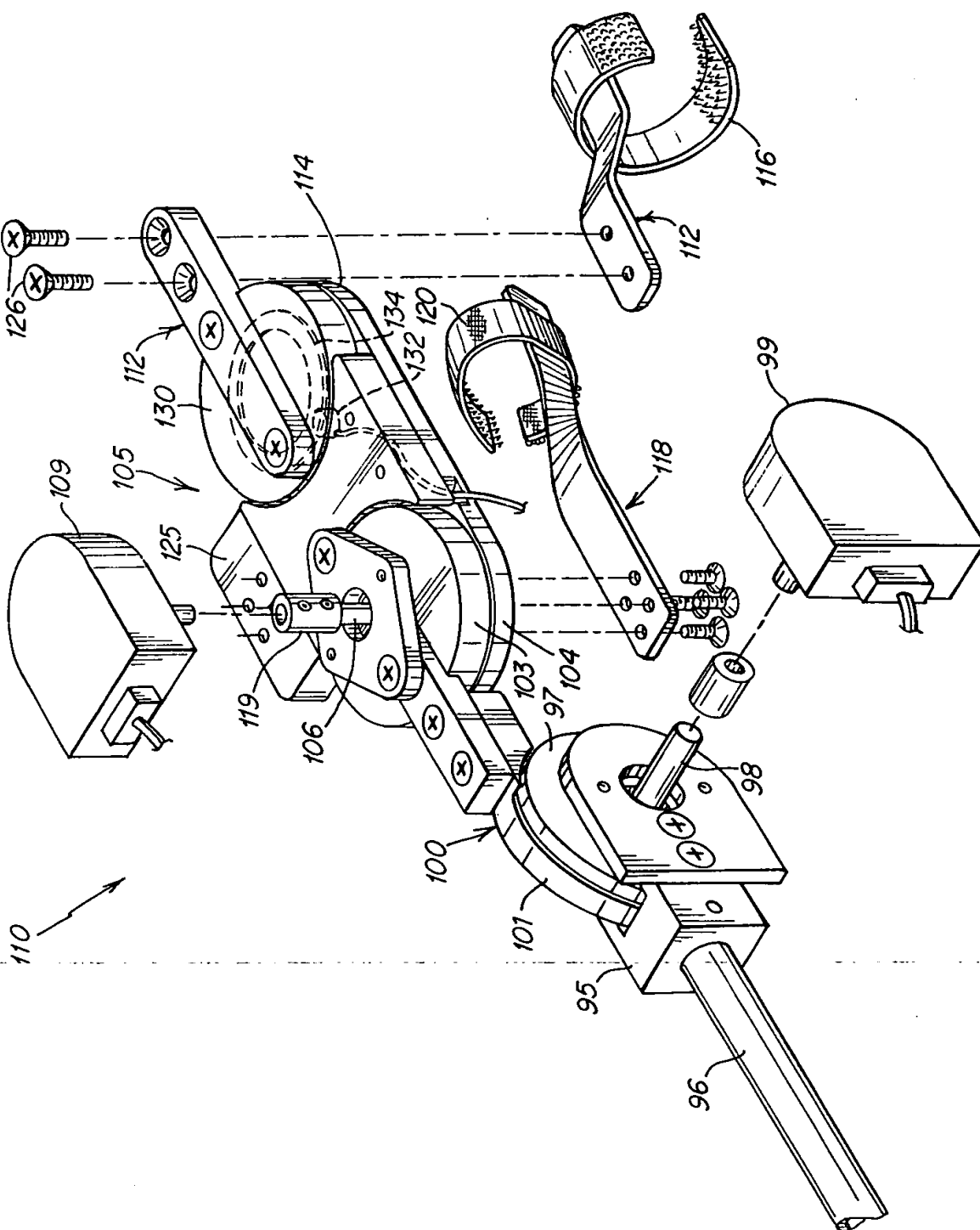


Fig. 5



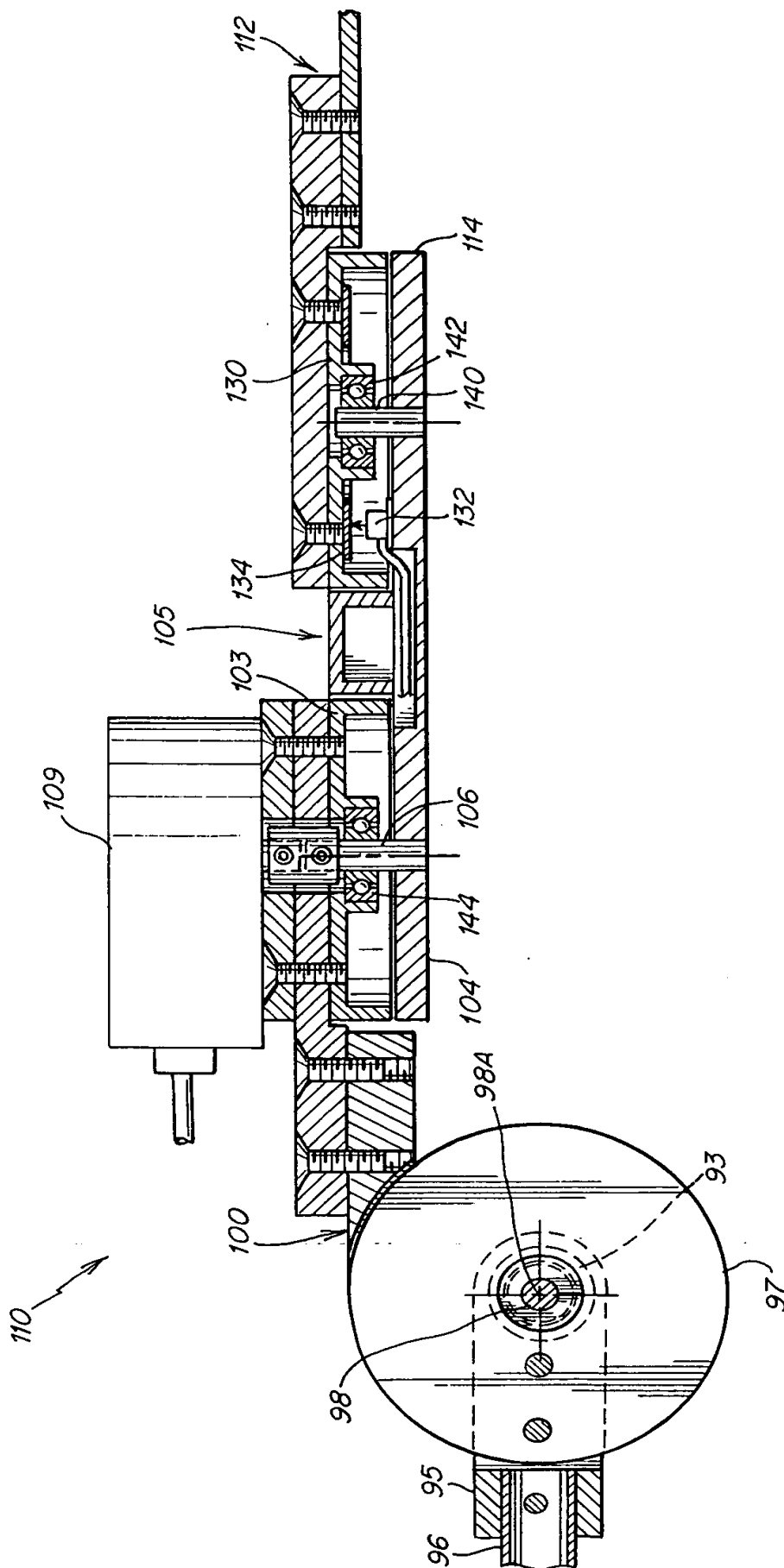


Fig. 6





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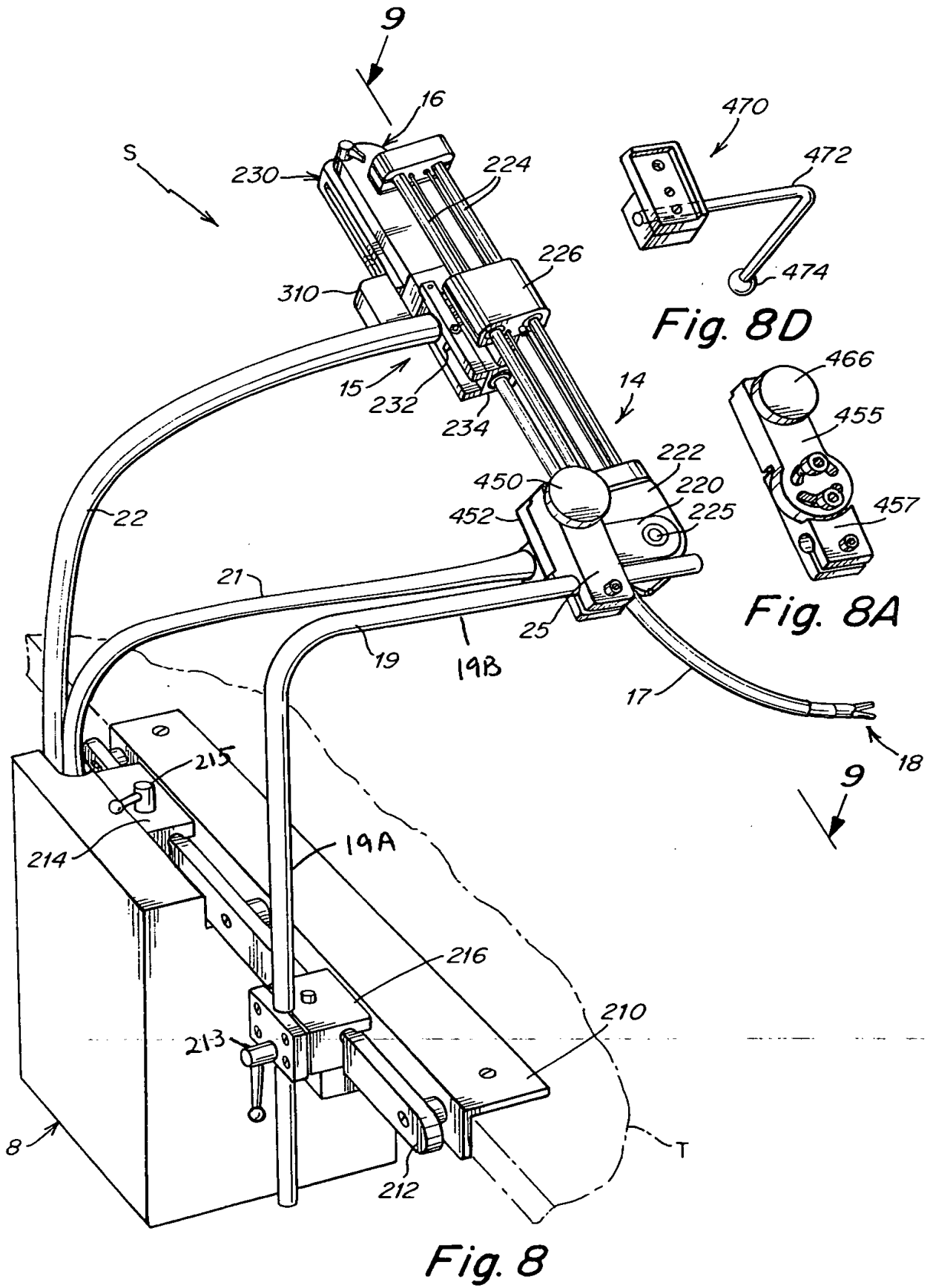


FIG. 8B

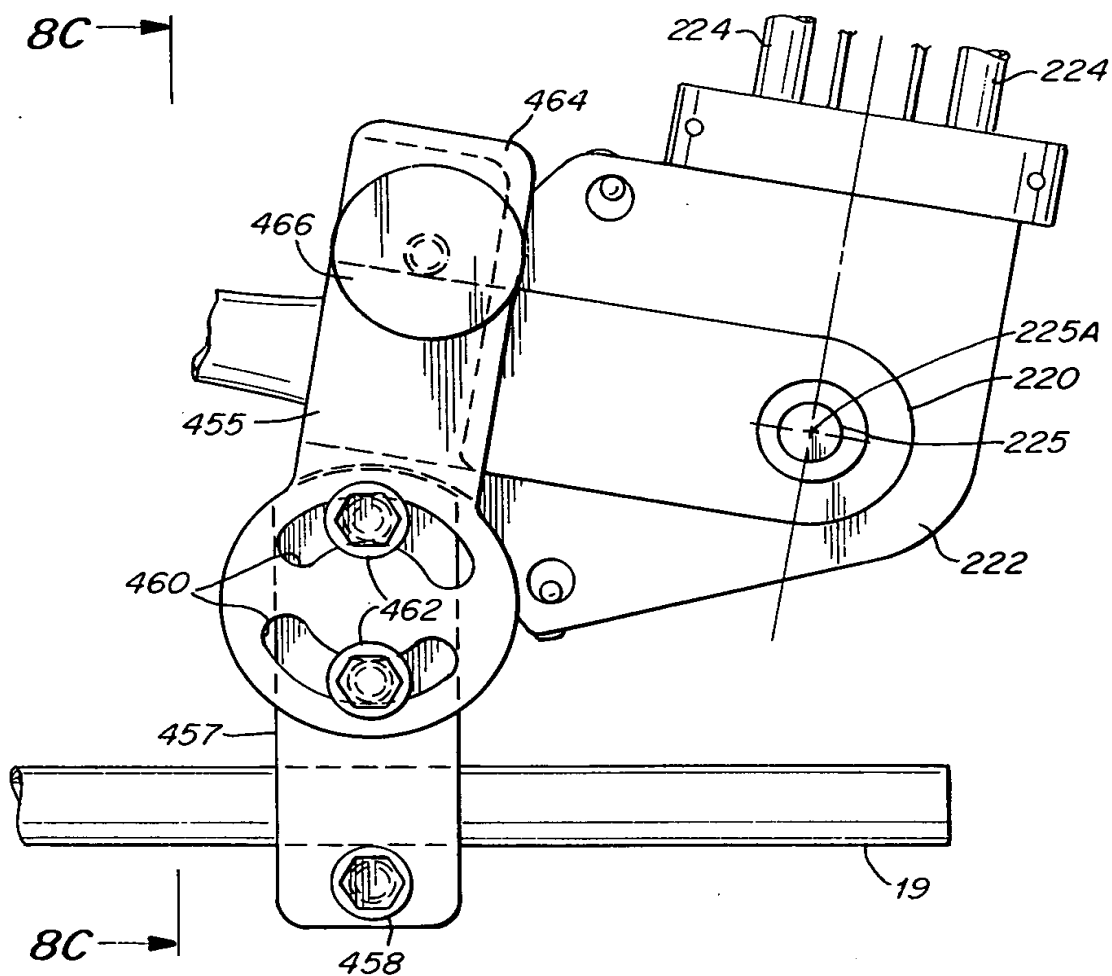


Fig. 8B

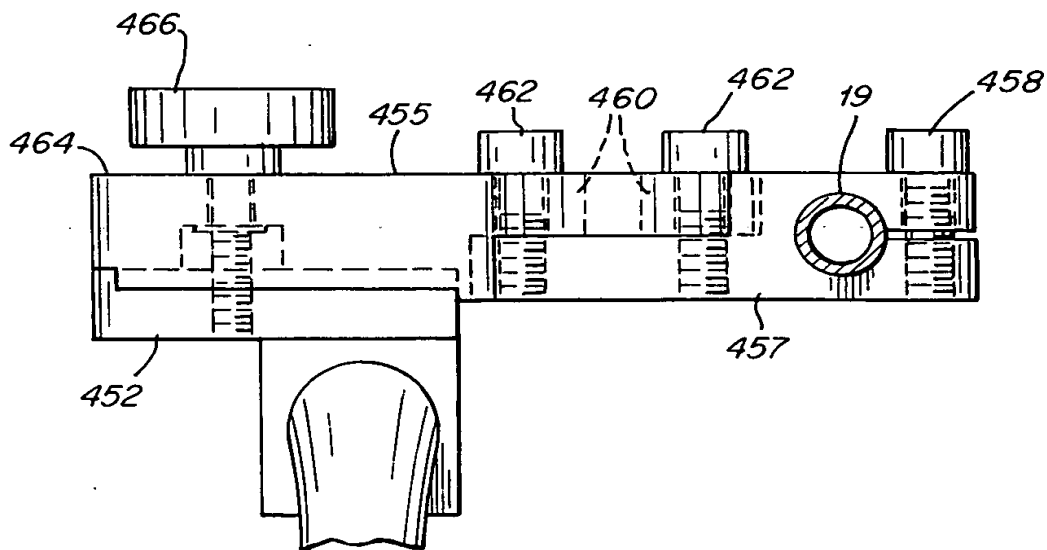
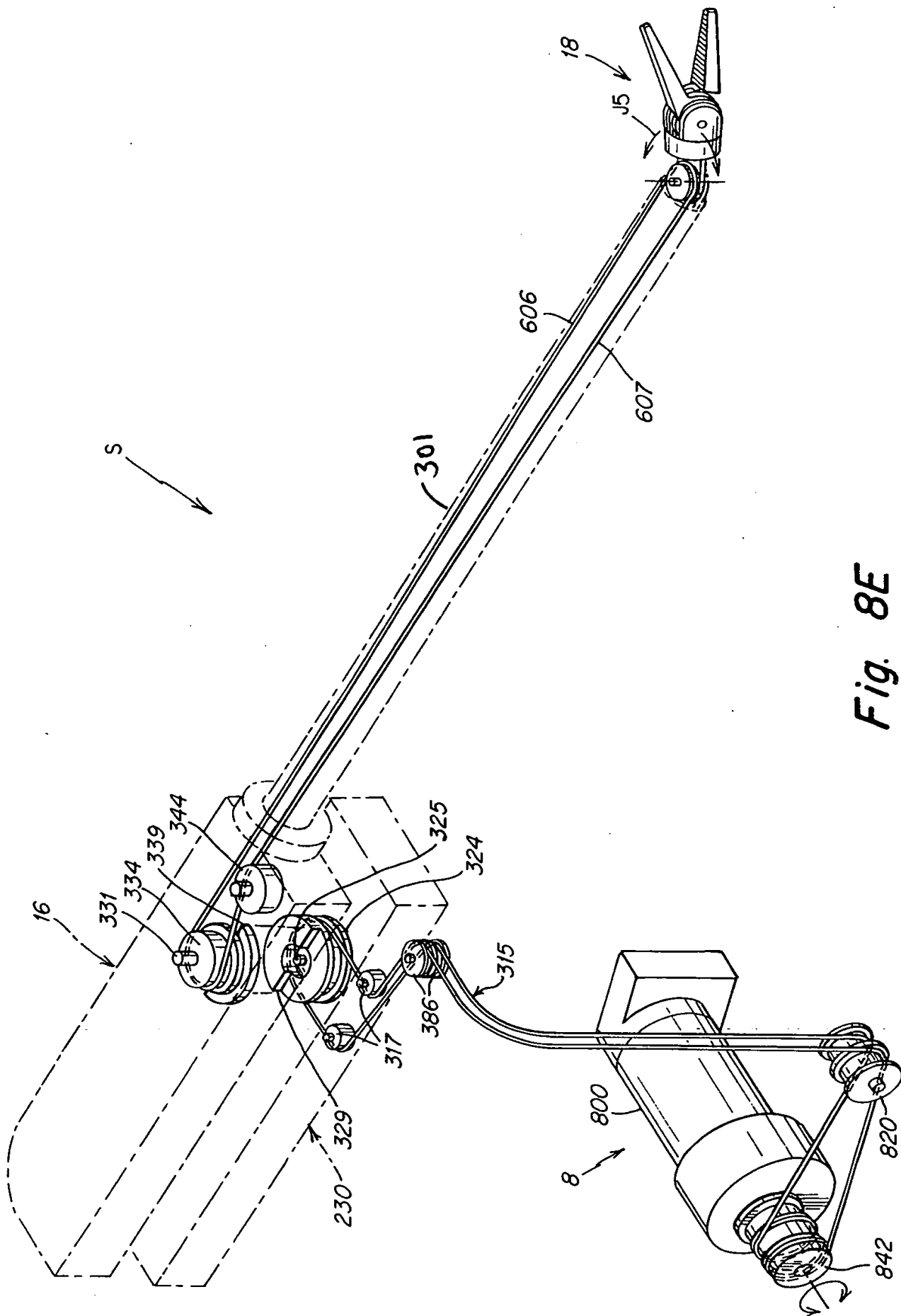
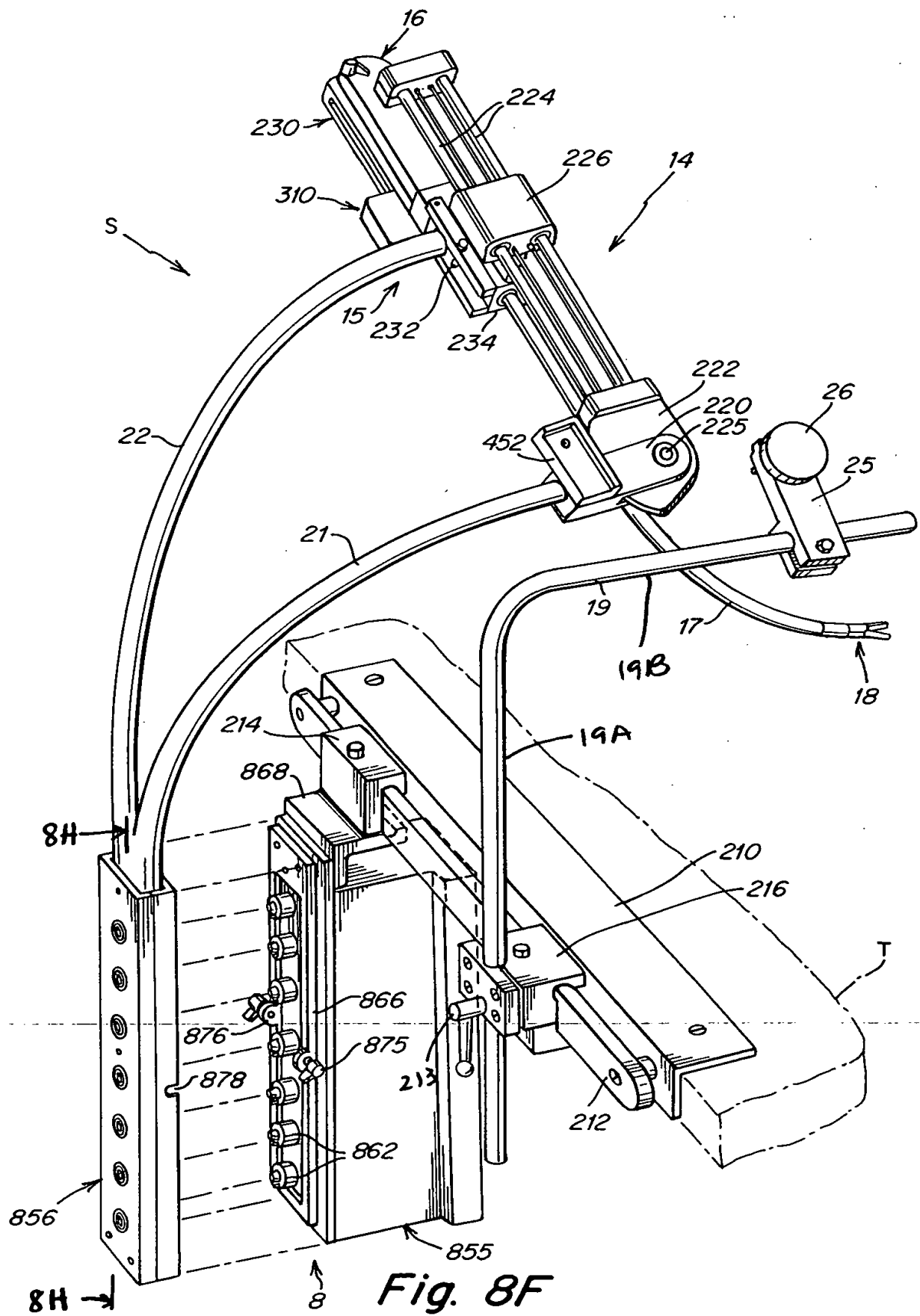


Fig. 8C



**Fig. 8E**

FIG. 8F



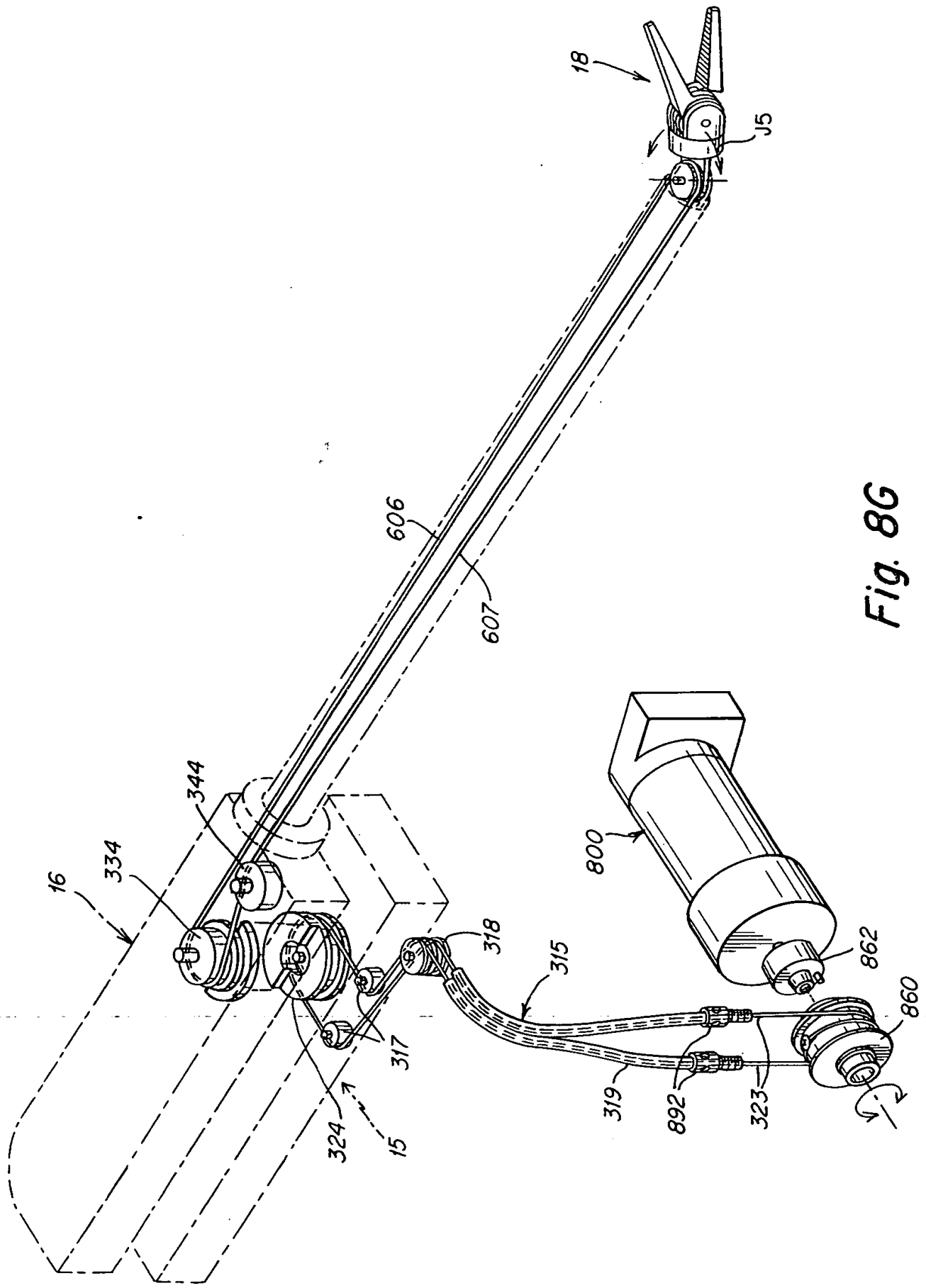


Fig. 86



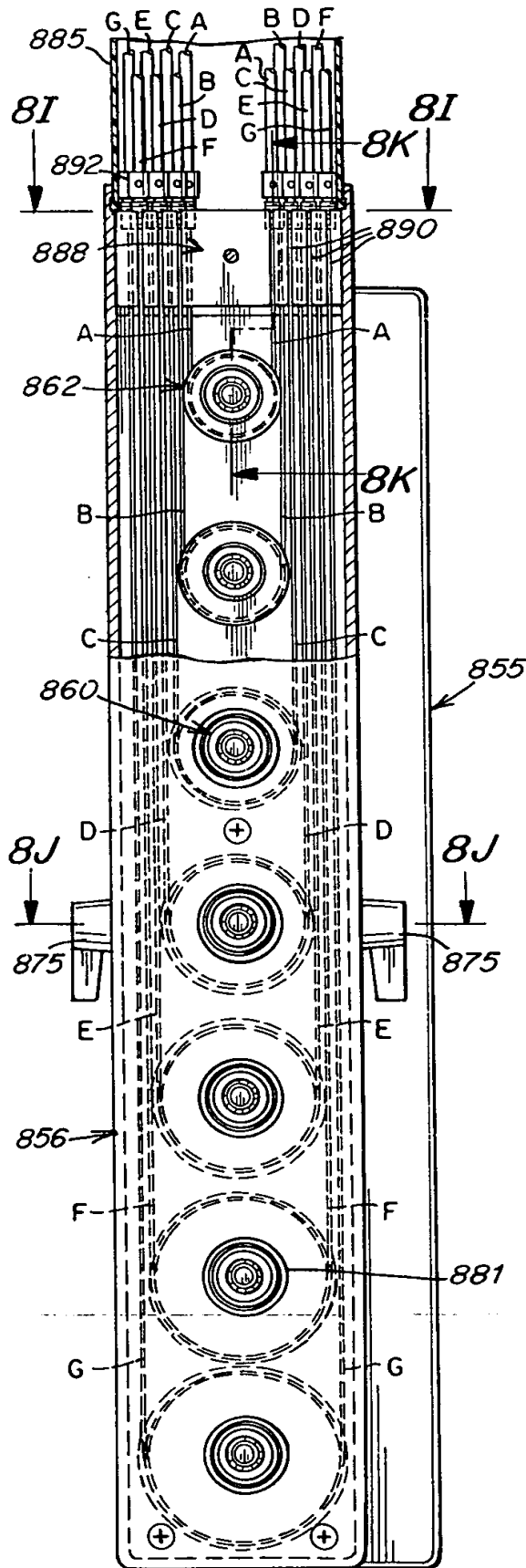


Fig. 8H

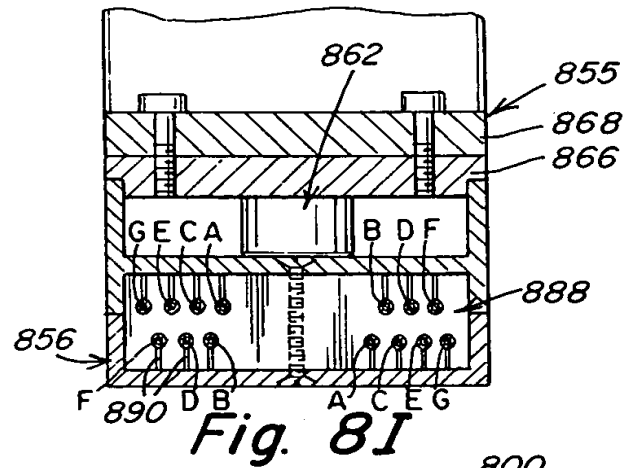


Fig. 8I

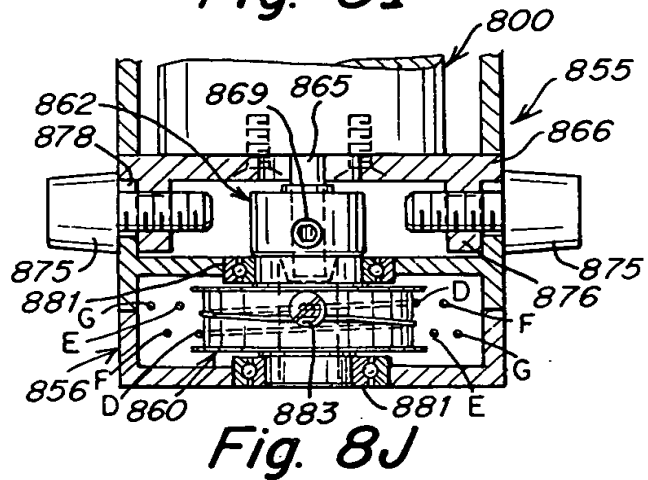


Fig. 8J

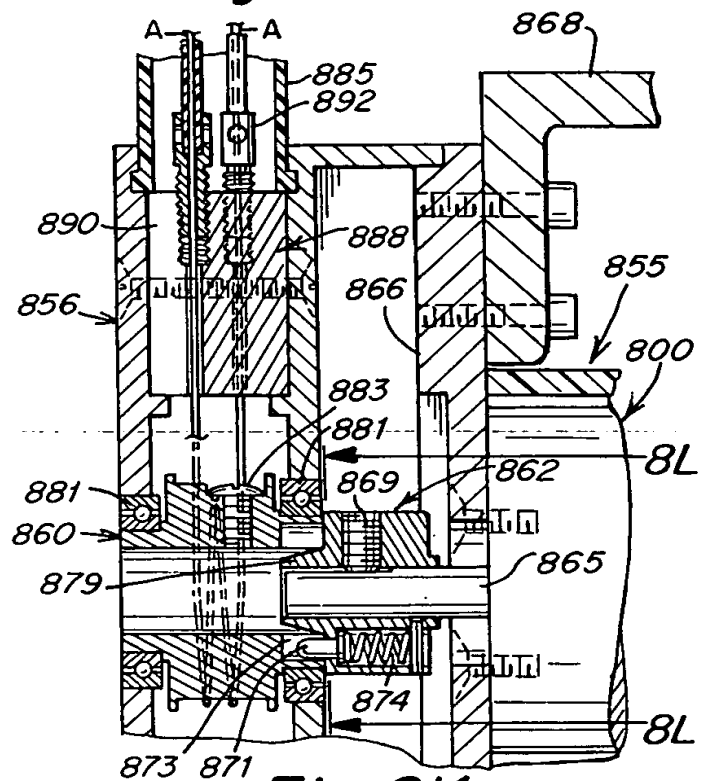
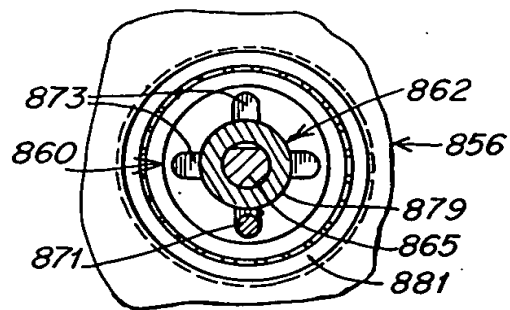


Fig. 8K



*Fig. 8L*

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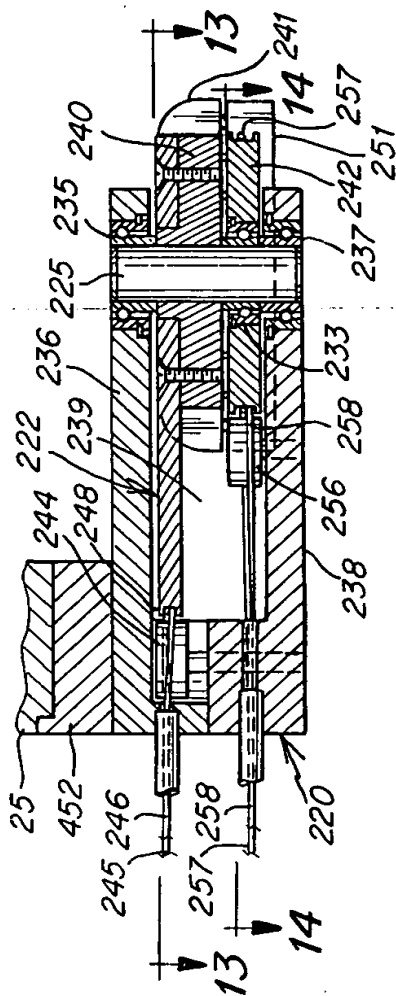


Fig. 12

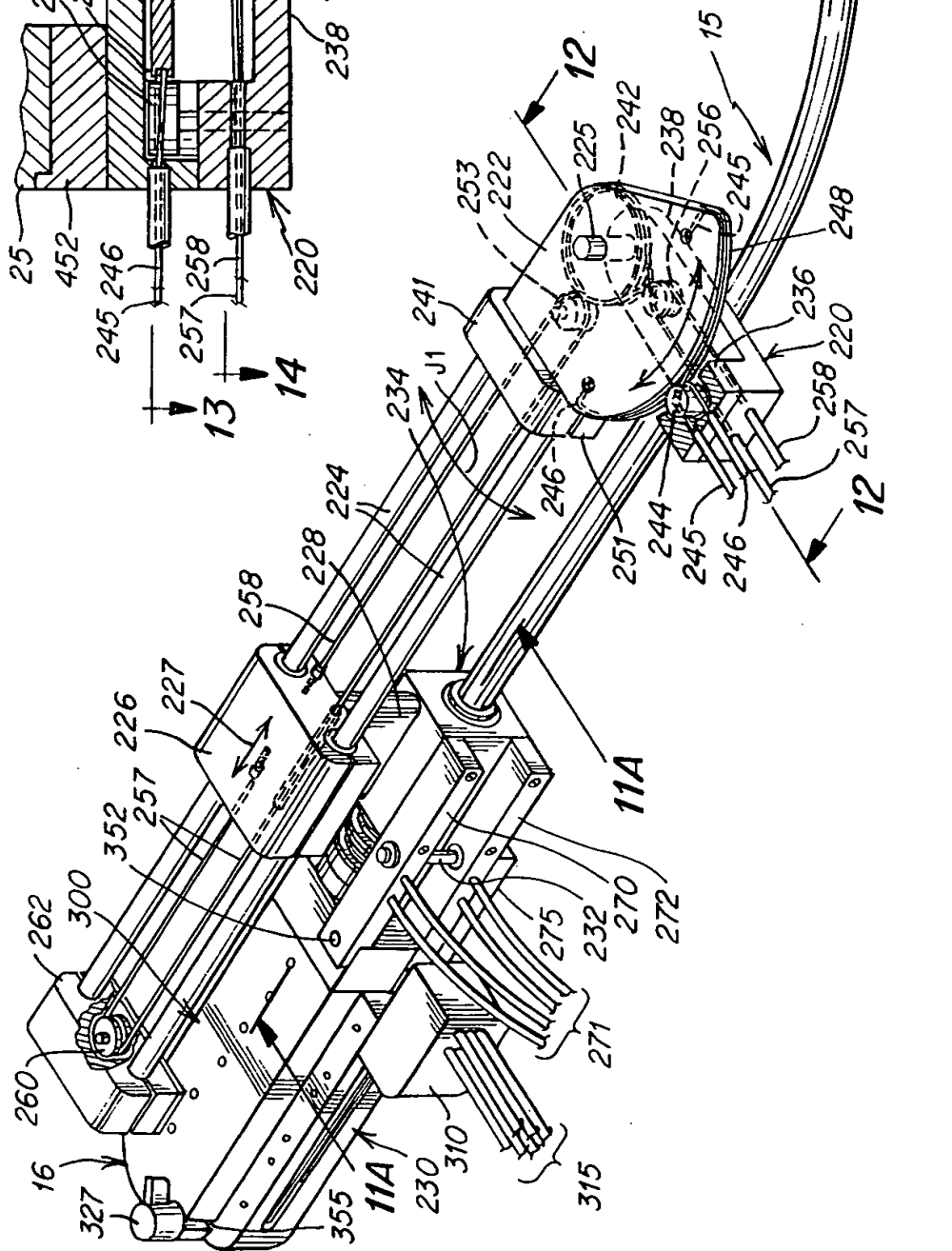


Fig. 11

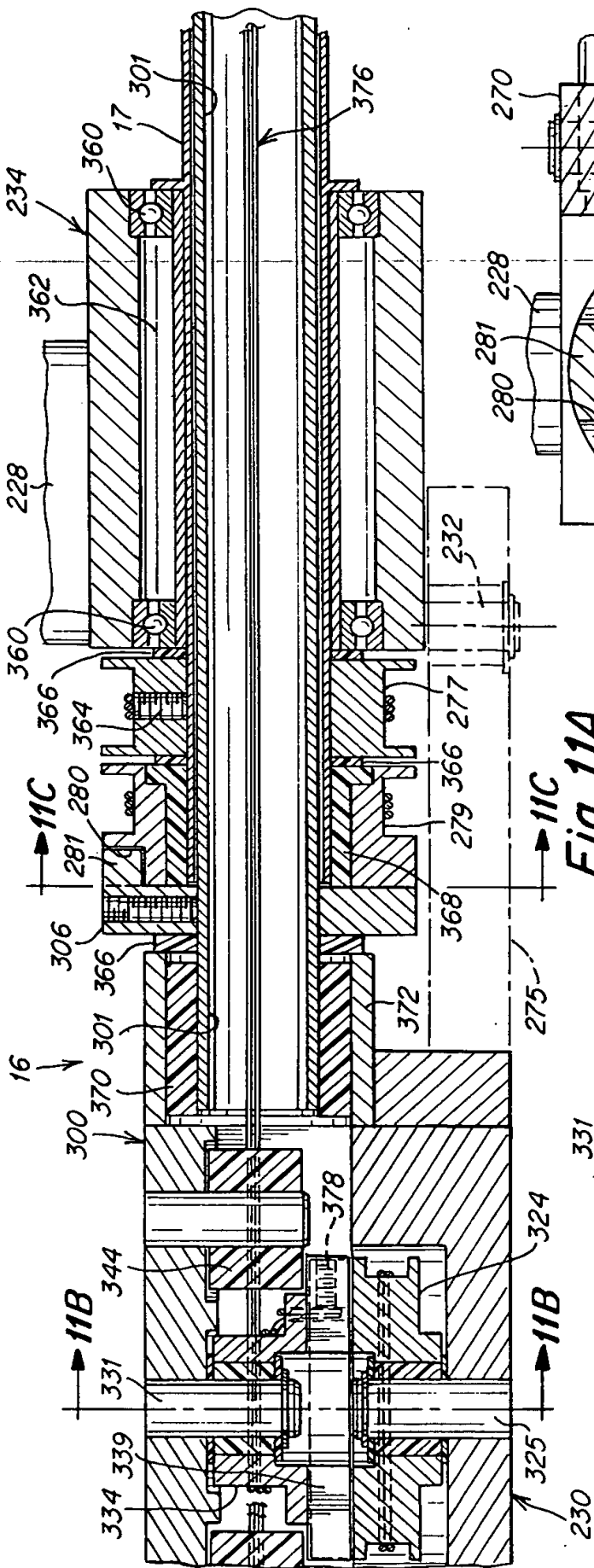


Fig. 11A

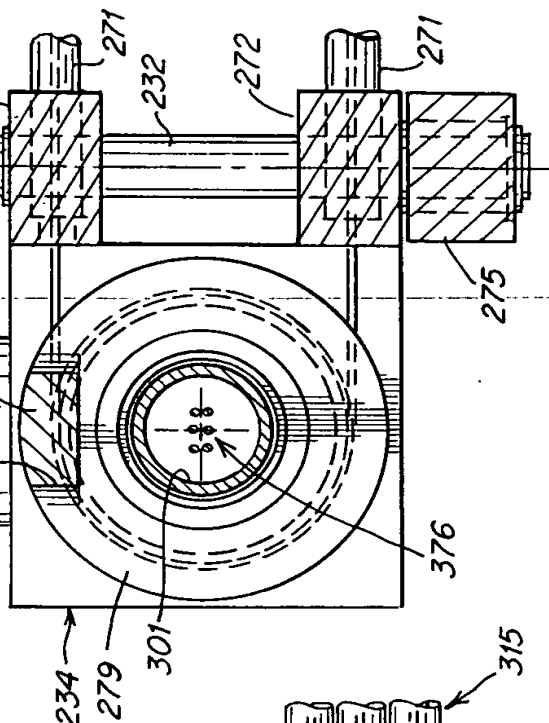


Fig. 11B

Fig. 11C

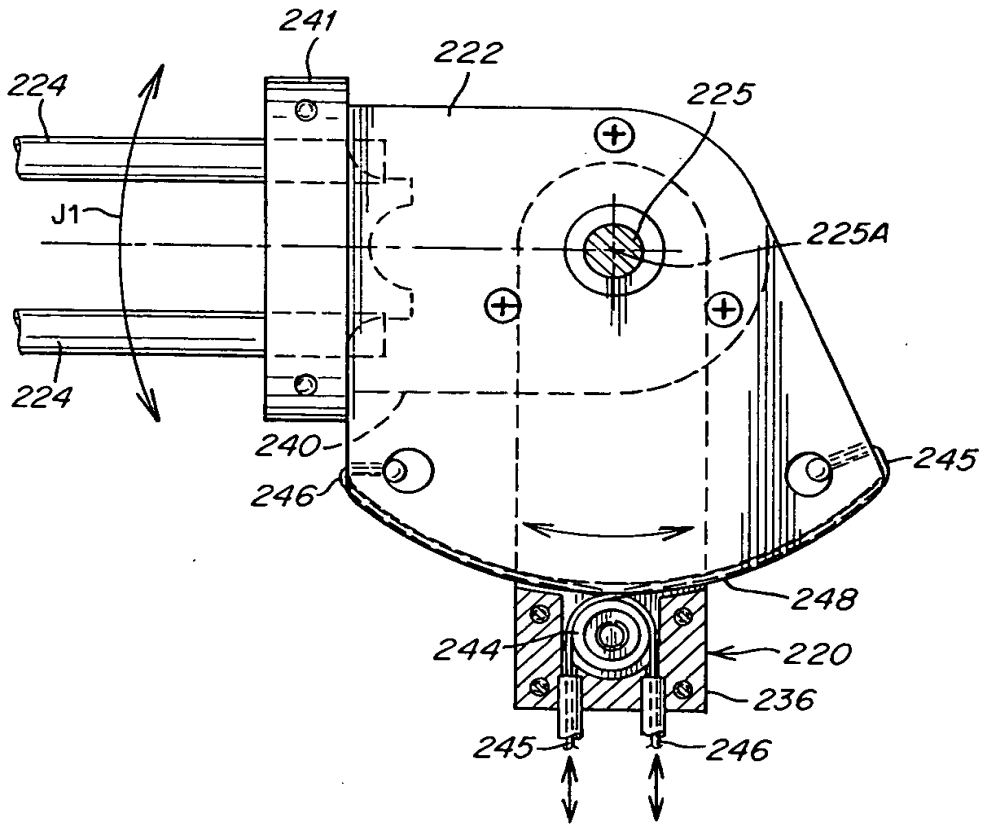


Fig. 13

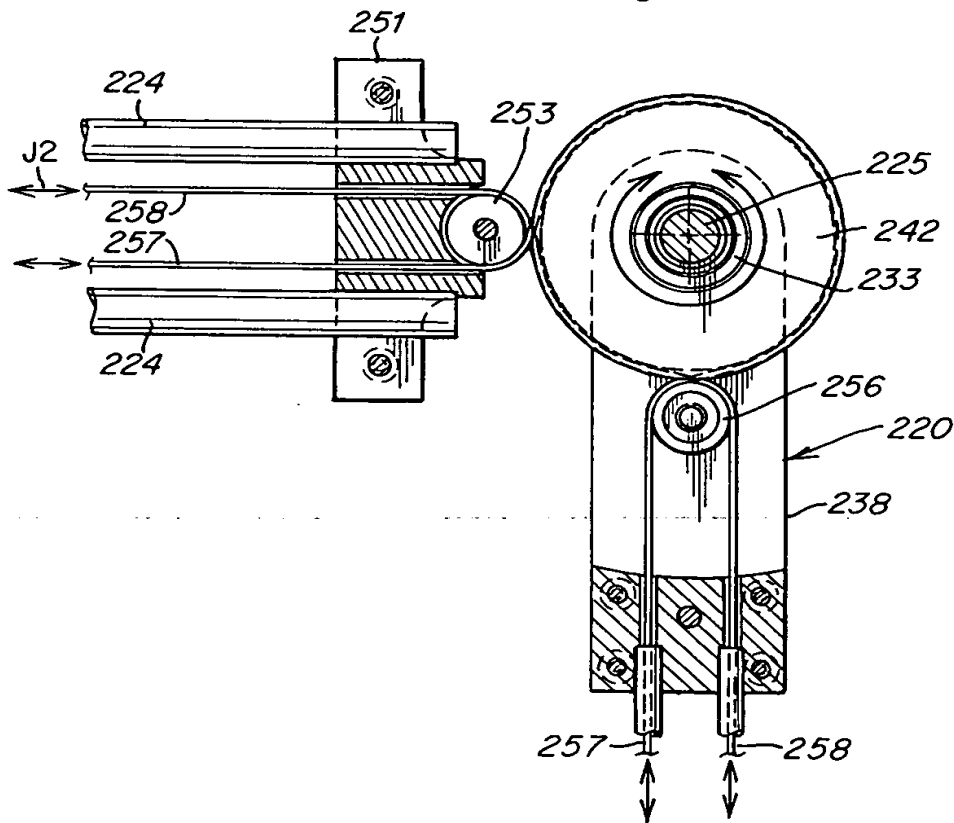


Fig. 14



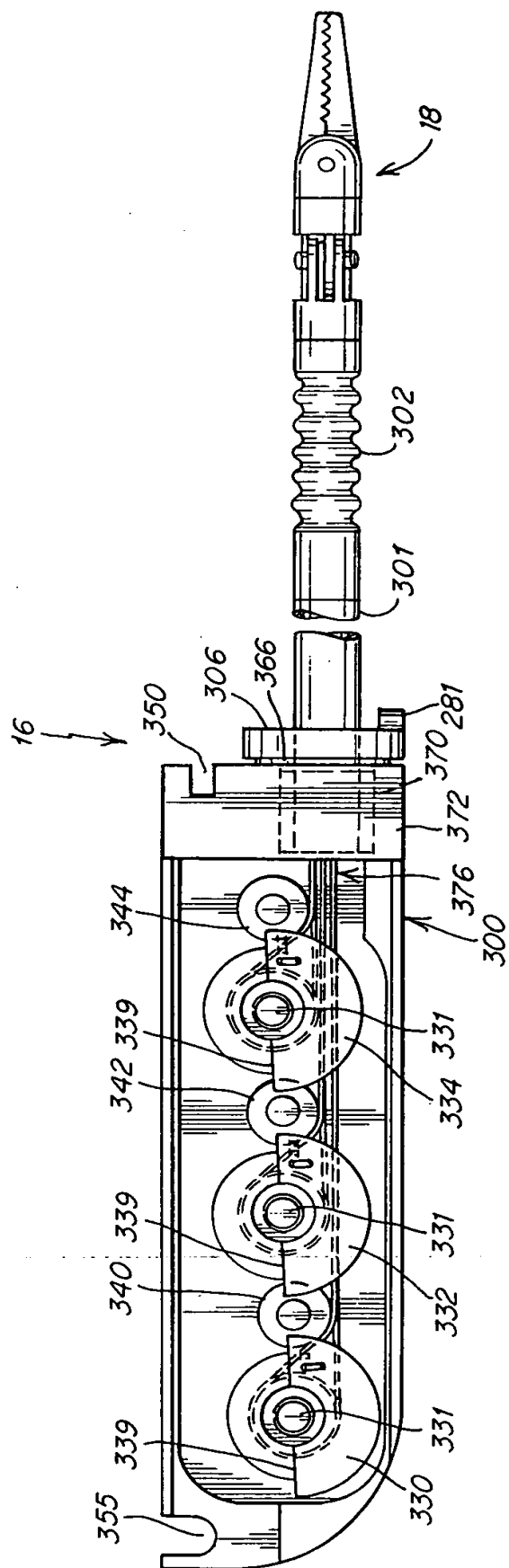
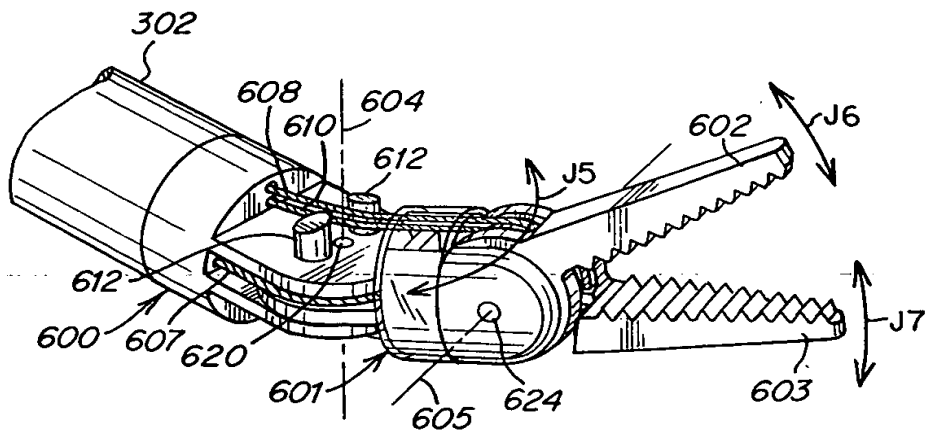
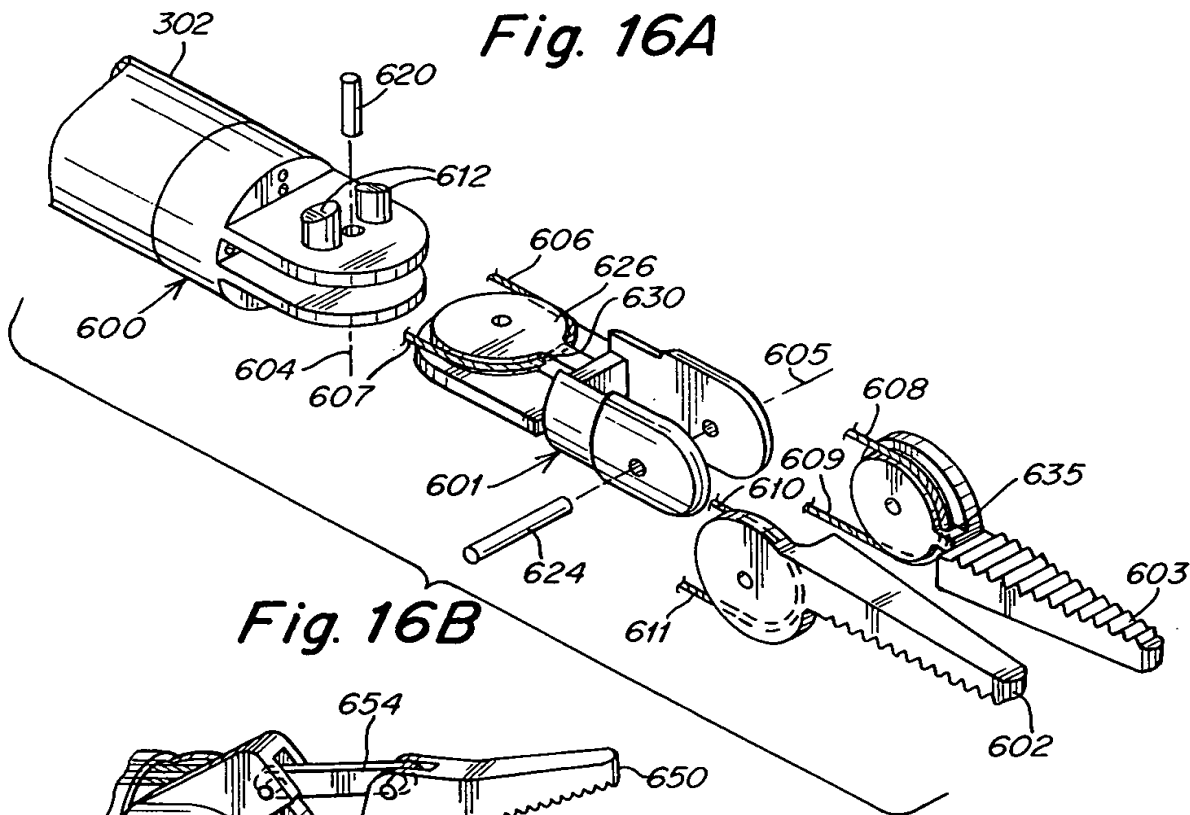


Fig. 15A

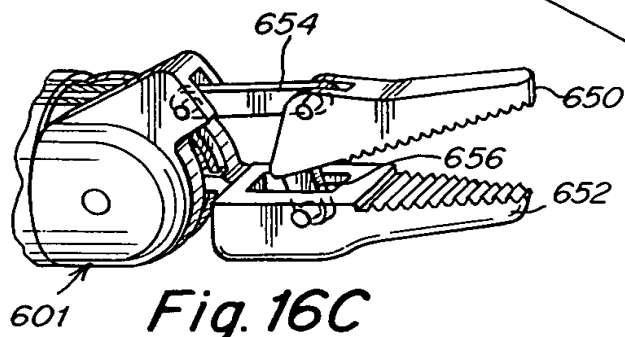




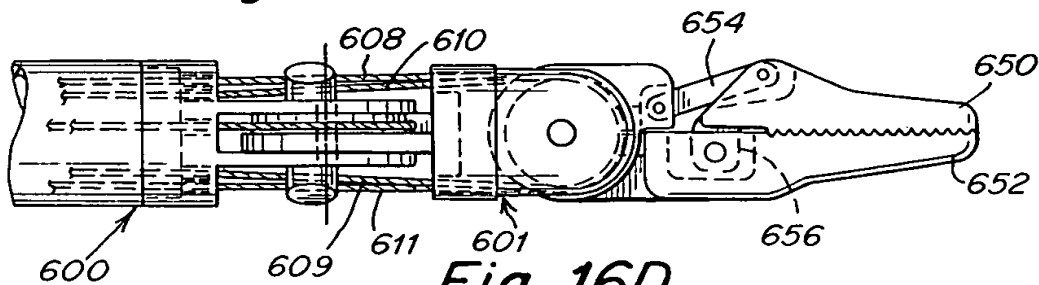
**Fig. 16A**



**Fig. 16B**

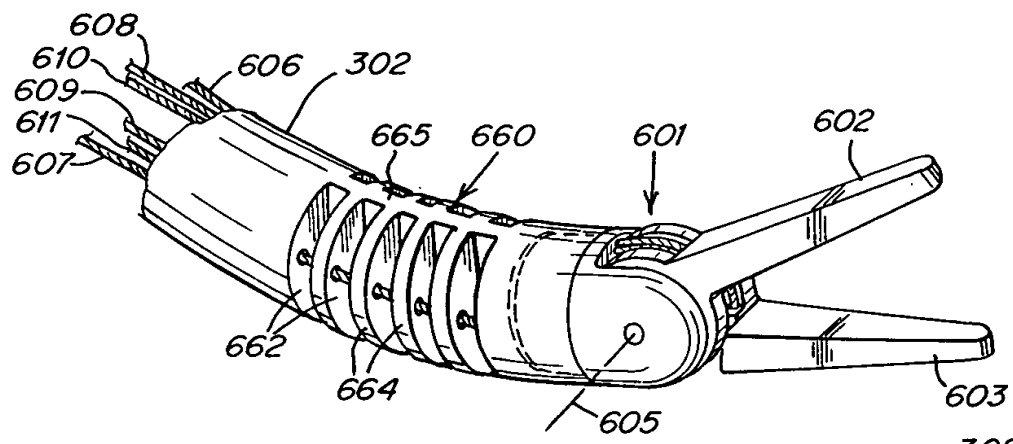


**Fig. 16C**

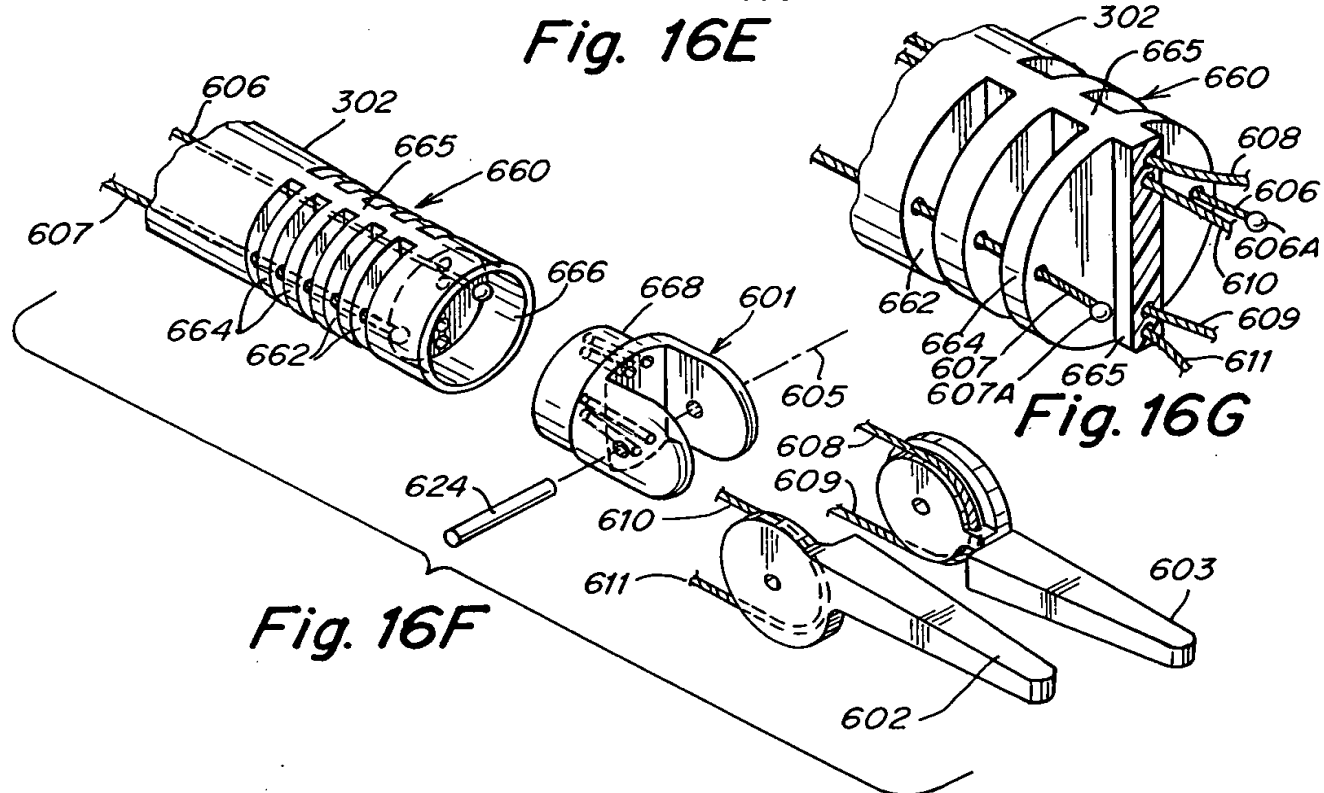


**Fig. 16D**

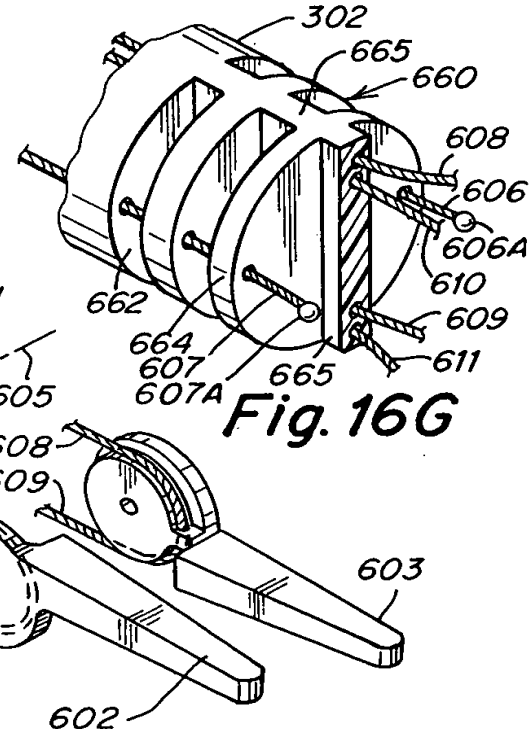
FIG. 16E



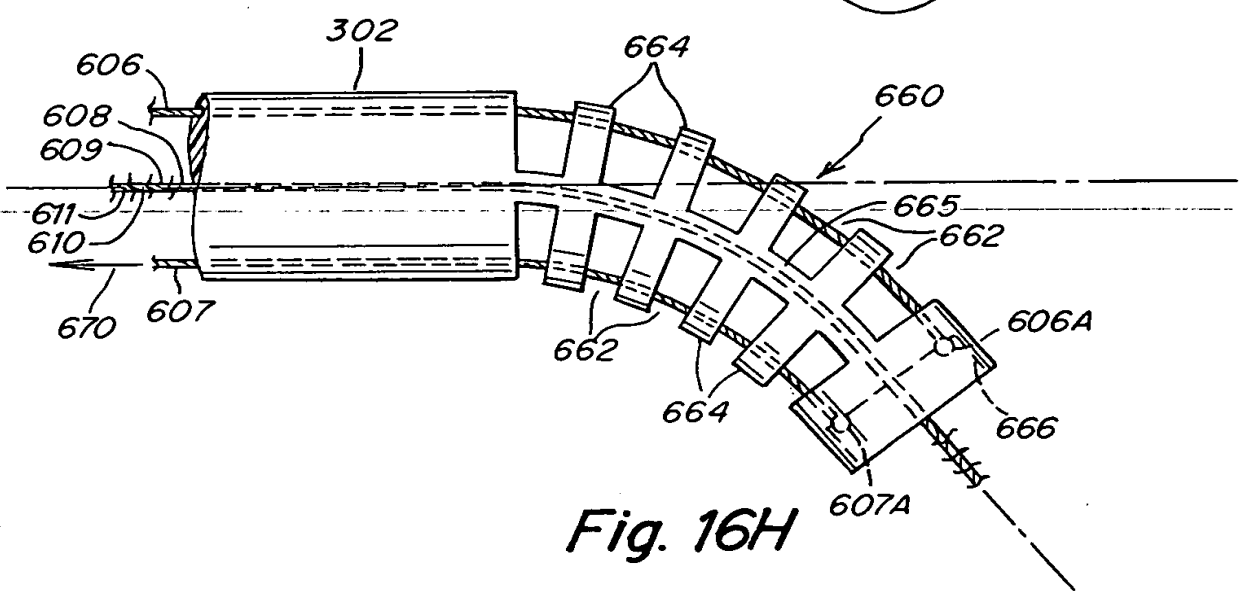
**Fig. 16E**



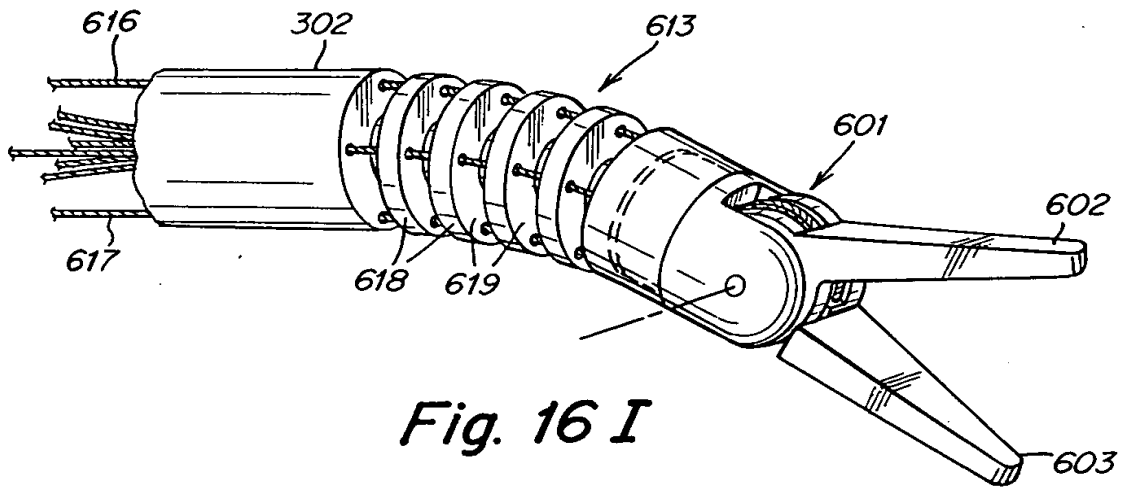
**Fig. 16F**



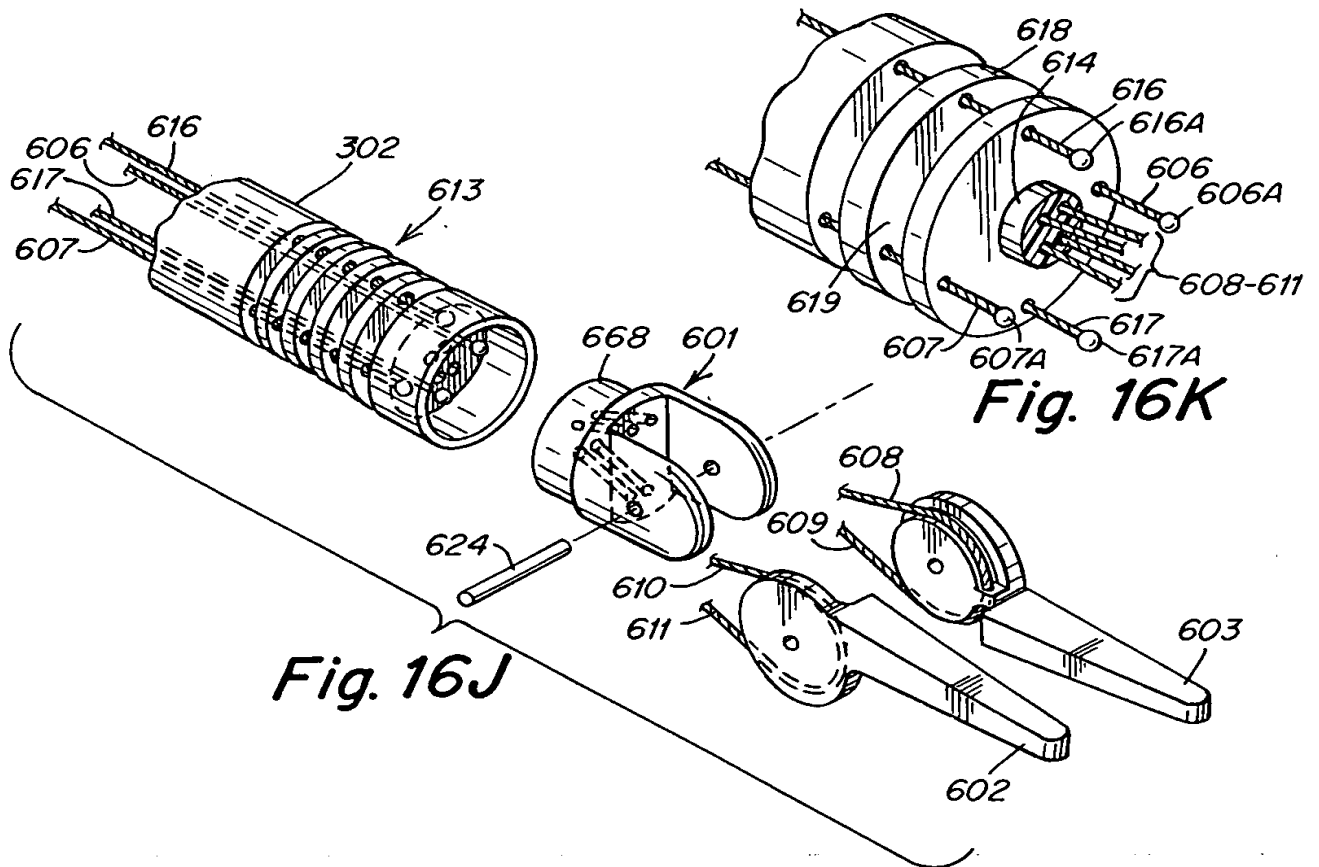
**Fig. 16G**



**Fig. 16H**



**Fig. 16 I**



**Fig. 16K**

**Fig. 16J**

FIG. 16 I

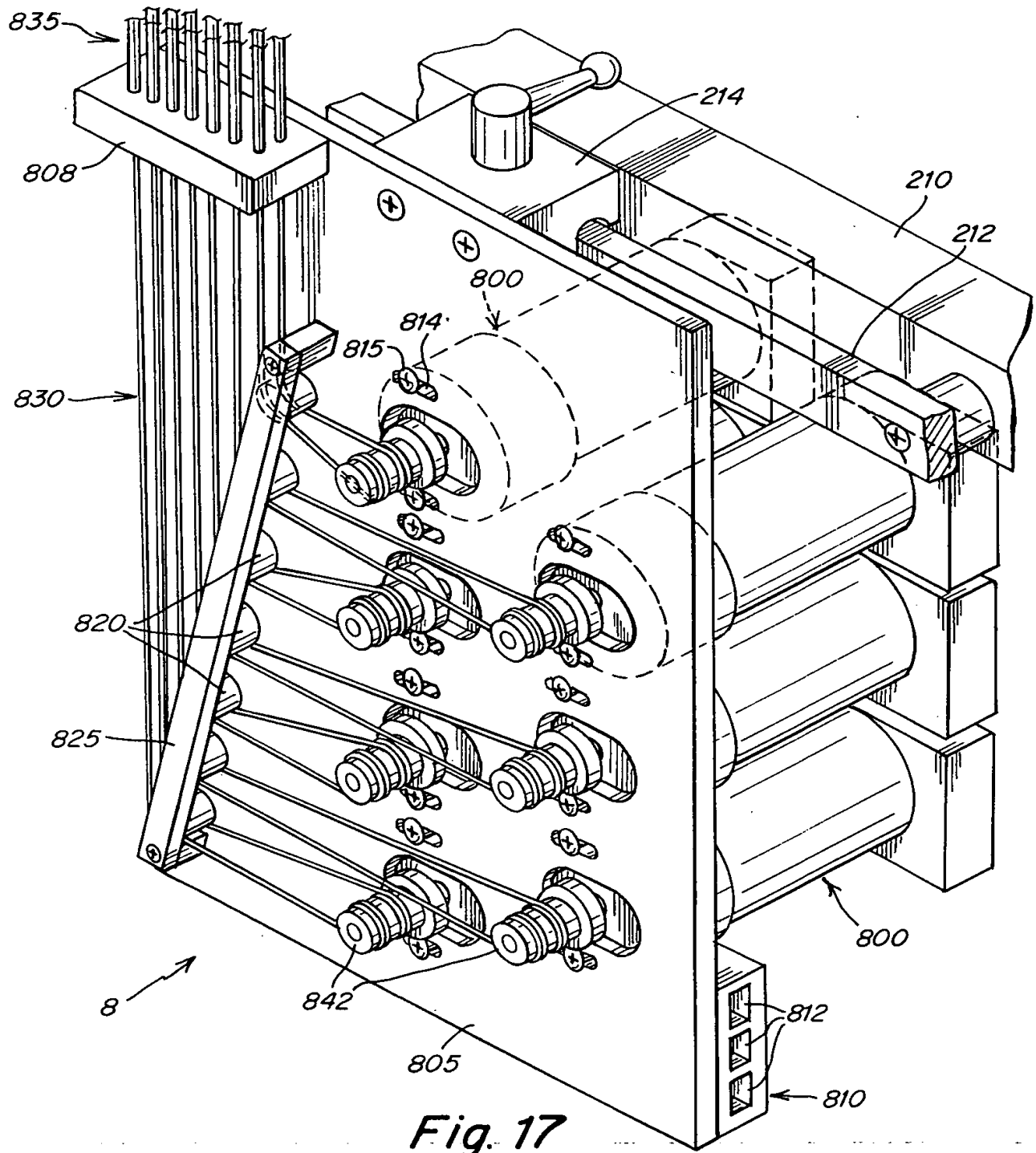


Fig. 17

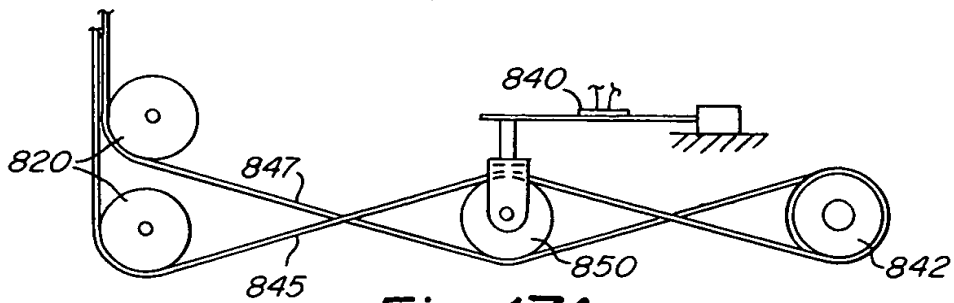
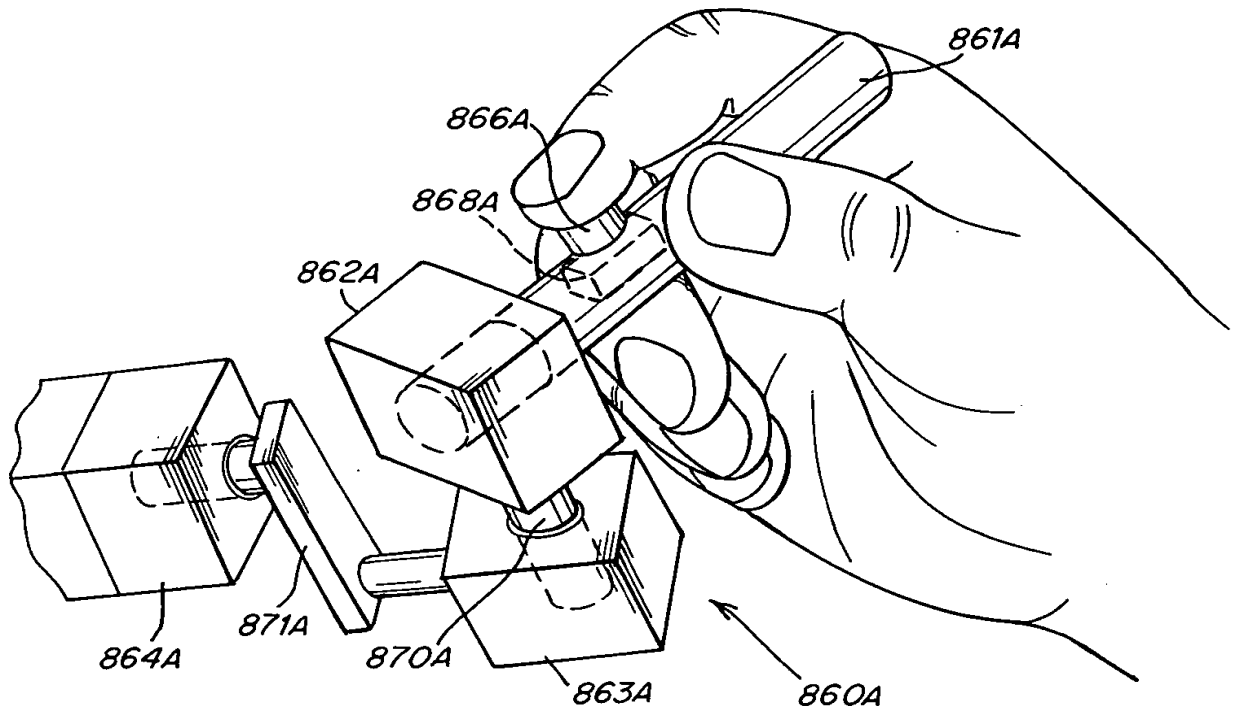
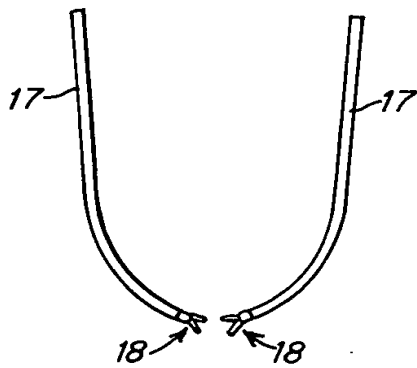


Fig. 17A

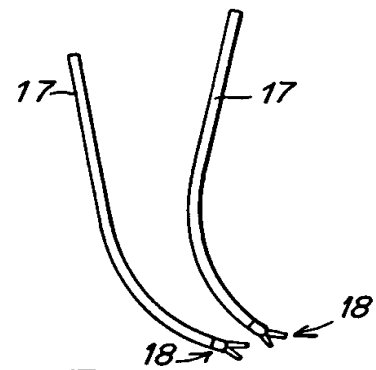
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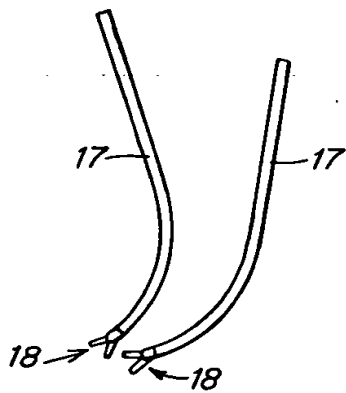
**Fig. 18**



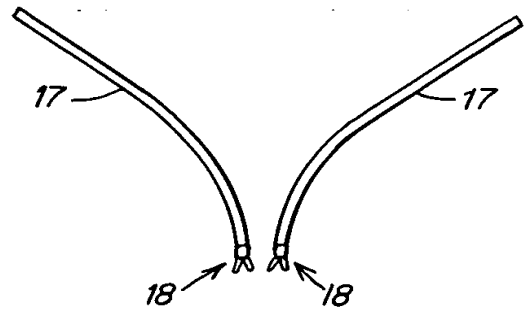
**Fig. 19 A**



**Fig. 19 B**



**Fig. 19 C**



**Fig. 19 D**

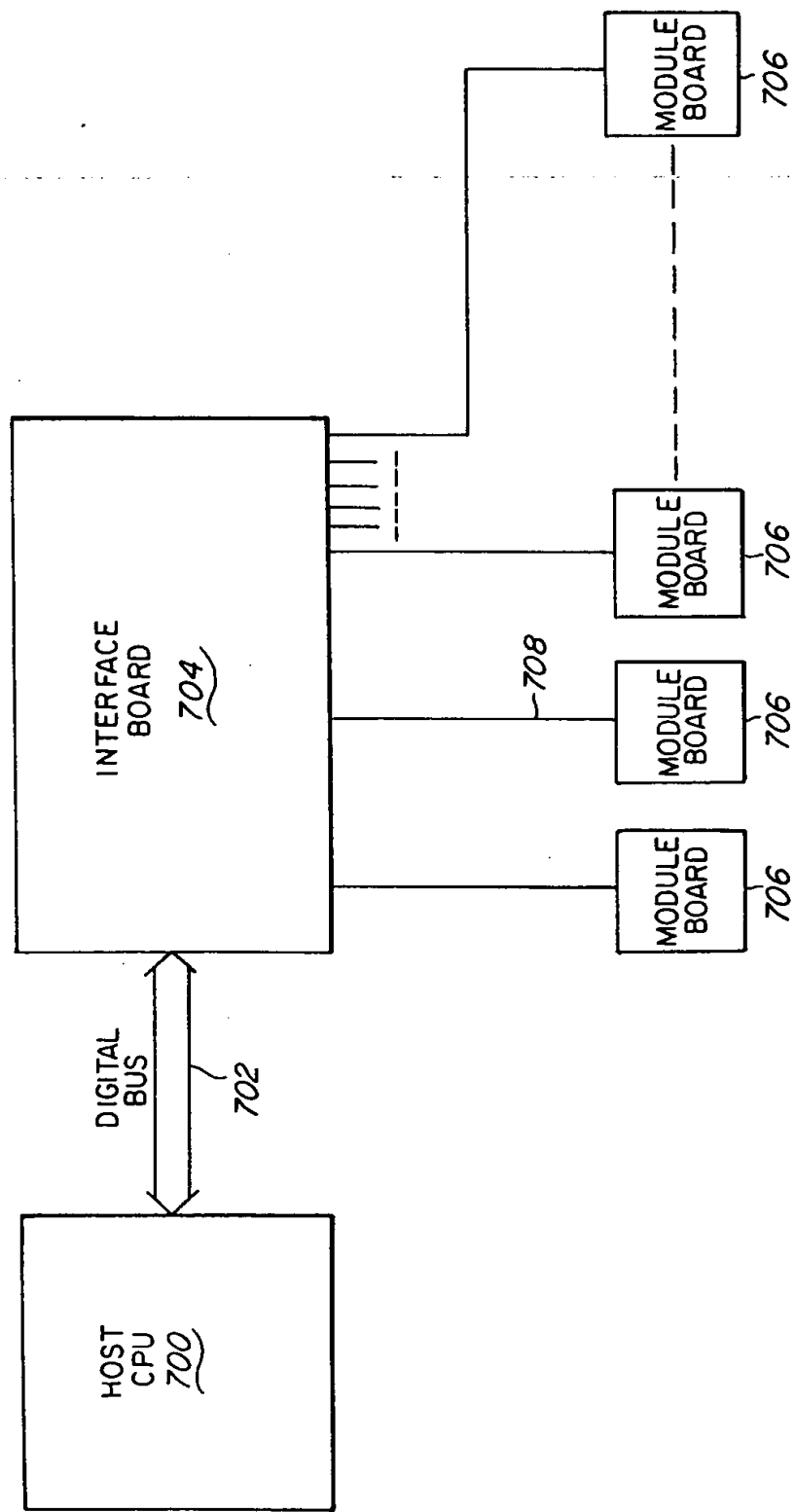


Fig. 20

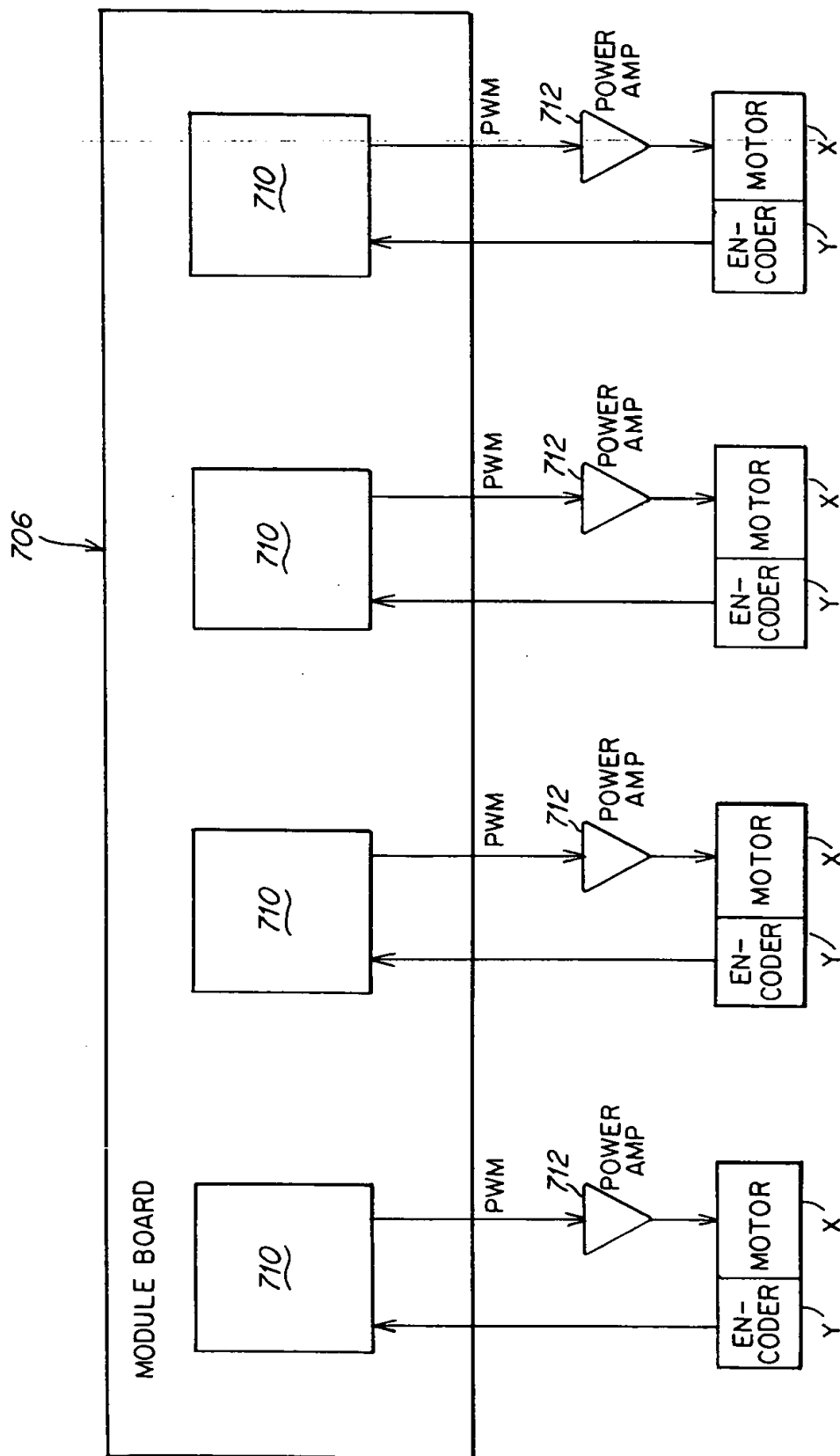


Fig. 21

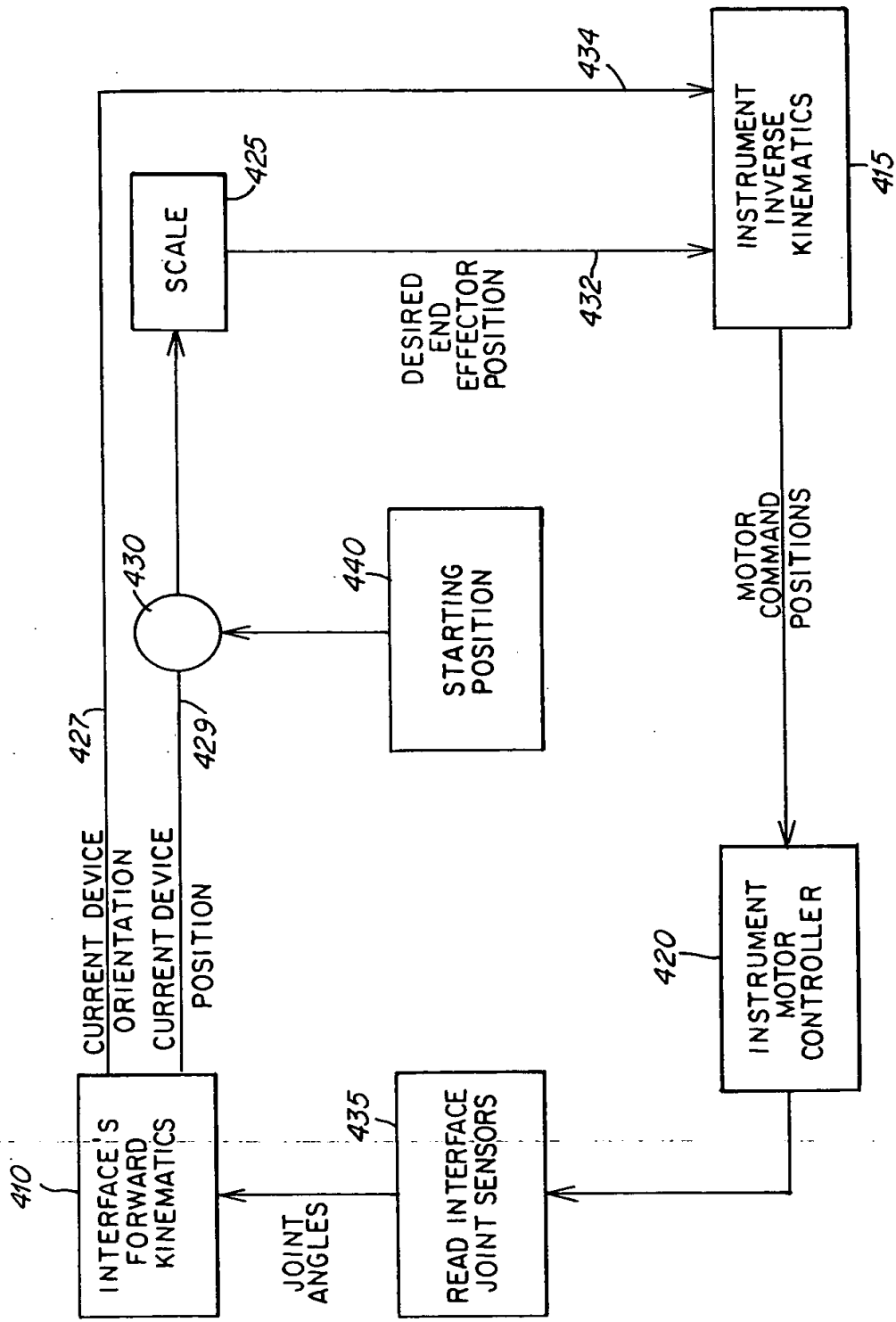
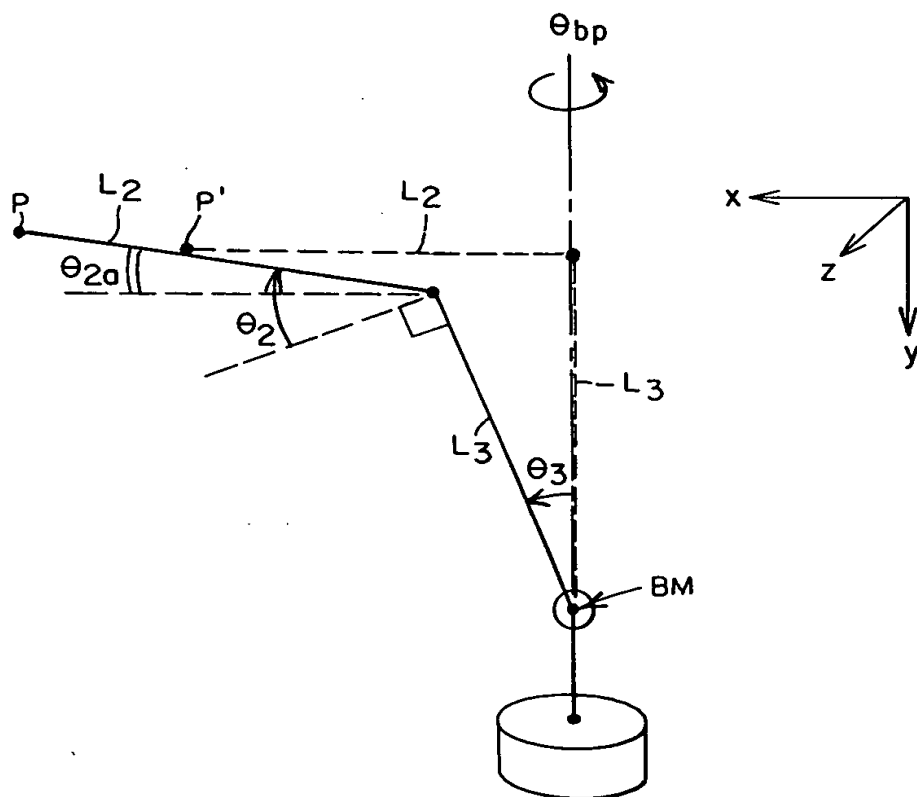
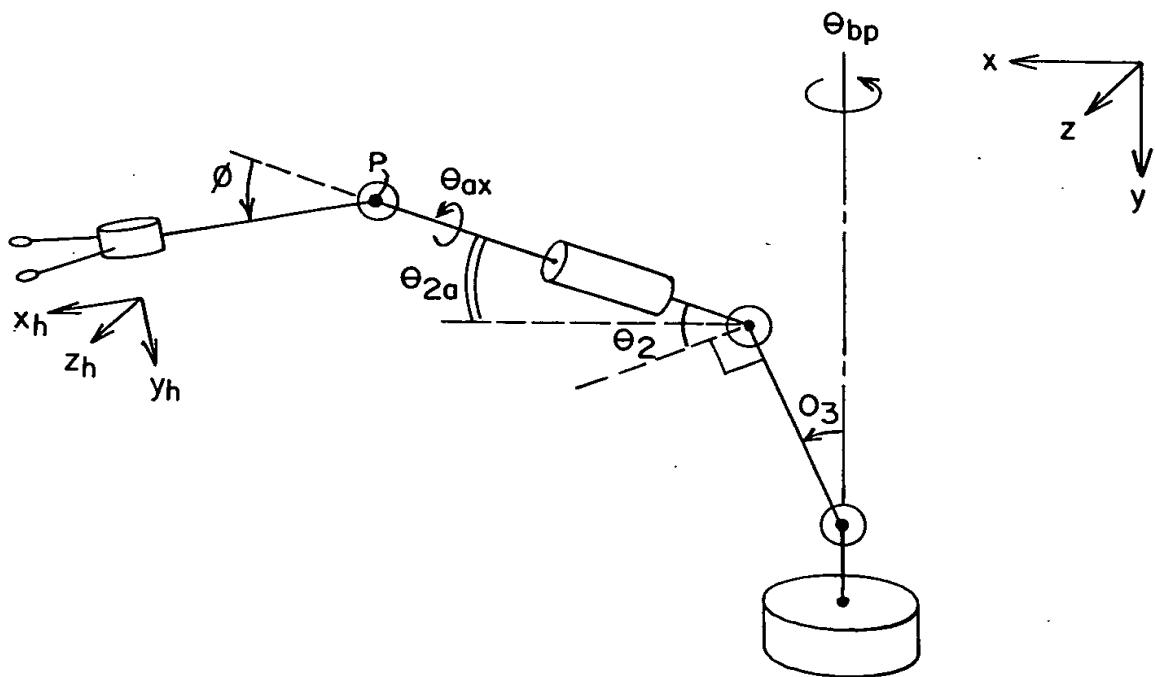


Fig. 22

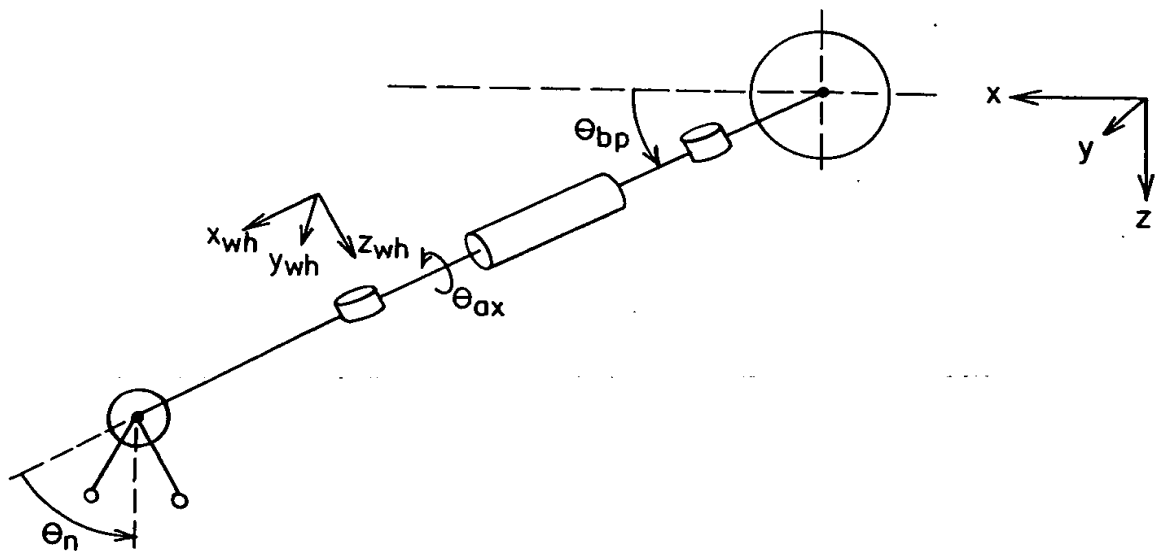




*Fig. 23*



*Fig. 24A*



*Fig. 24B*

The diagram illustrates a two-link robotic arm in a 3D coordinate system. The base frame has axes  $x$ ,  $y$ , and  $z$ . The first link, of length  $L_b$ , is oriented at an angle  $\theta_b$  relative to the  $z$ -axis. A second frame is established at the end of the first link with axes  $x_{wf}$ ,  $y_{wf}$ , and  $z_{wf}$ . The second link, of length  $L_s$ , is oriented at an angle  $\psi$  relative to the extension of the first link. A third frame is established at the end of the second link with axes  $x_{wf}'$ ,  $y_{wf}'$ , and  $z_{wf}'$ . The angle between the  $z_{wf}$  and  $z_{wf}'$  axes is  $\theta_b$ . The angle between the  $x_{wf}$  and  $x_{wf}'$  axes is  $\frac{\pi}{2} - \theta_b$ . A dashed line indicates the rotation of the second link around the  $z$ -axis, labeled with  $\omega$ . The label  $BS$  is placed near the base of the second link.

*Fig. 25*

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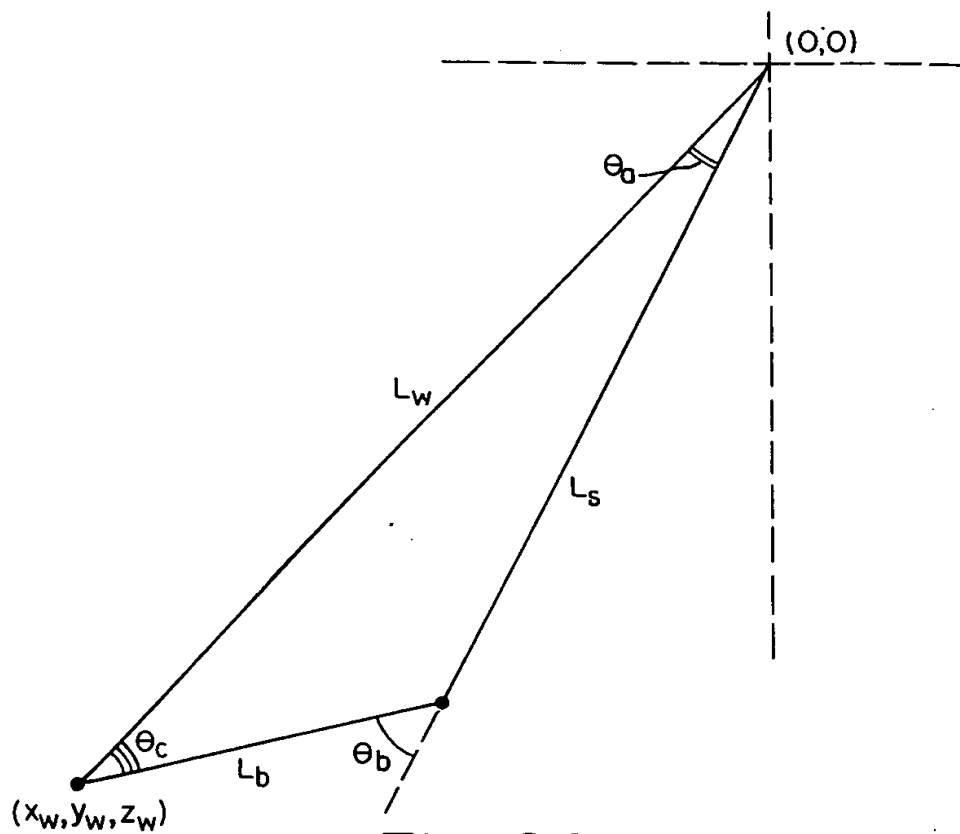


Fig. 26

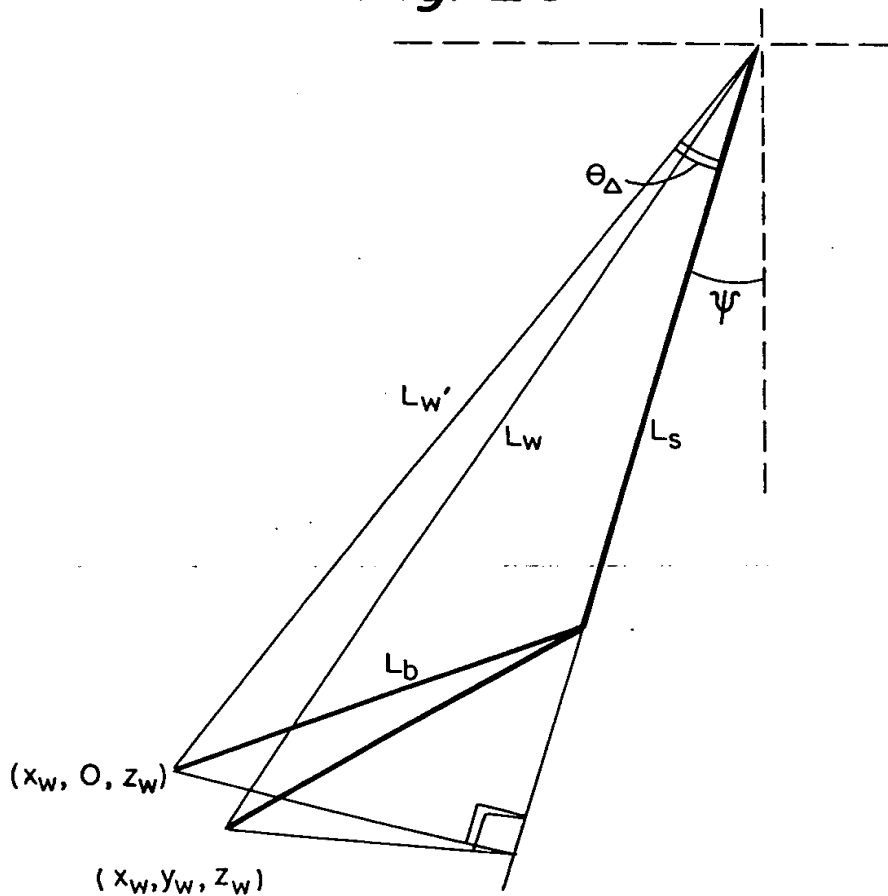
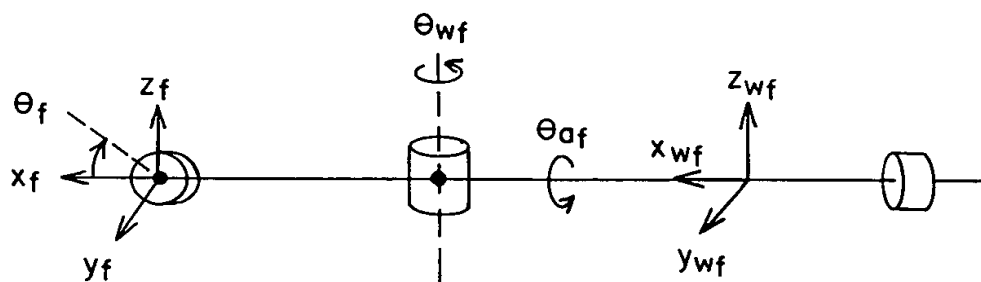


Fig. 27



*Fig. 28*

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